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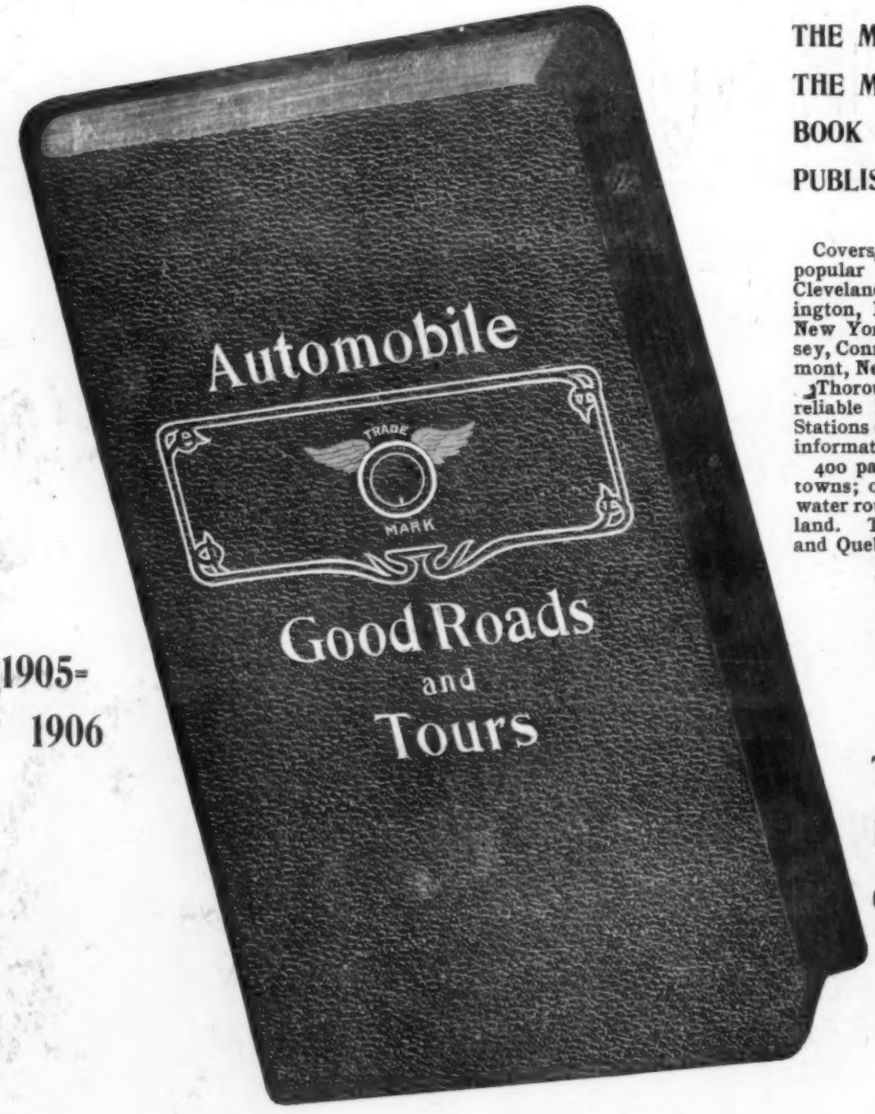

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Factory, No. 3, New Brunswick, N. J.

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THE AUTOMOBILE

VOL. XII. NEW YORK, THURSDAY, JUNE 8, 1905—CHICAGO NO. 23

TIRE REPAIRING IN THE NIGHT WATCHES.

So much depends upon the tires of a modern long-distance racing automobile that the most elaborate preparations for changes and repairs, carried out by trained tire experts, are necessary to keep the car running in winning class. Especially in France, where automobile racing has flourished for years, has the art of tire handling been brought to a state of comparative perfection, and from abroad Americans have imported many tire "wrinkles" along with foreign cars. During the recent attempt of Guy Vaughan to drive a 40-horsepower Decauville car a thousand miles on the Empire City track at Yonkers, New York, some very fast work was done in changing tires. As the time occupied in stops was to be included in the total time, every second was of importance, and the tiremen were pushed to their best efforts. In some instances a complete change was made in six minutes—a time that will be appreciated by the tourist who has labored with a tire by the roadside. The photograph reproduced herewith shows the Continental tire force at the Empire City track during the Decauville run, the exposure having

TIRE REPAIR EXPERTS AT YONKERS RACE TRACK DURING GUY VAUGHAN'S ATTACK ON THE 1,000 MILE RECORD
Flashlight Photograph by Levick, New York, for The Automobile.

been made at night by flashlight. All sorts of appliances were provided for saving time, such as heavy steel bottles containing highly compressed air, powerful pumps, and tools and materials in variety, in addition to the tires themselves.

The scene is decidedly a weird one, with its sharply outlined foreground, the half-obscured figures further back and the phantom-like clubhouse barely visible in the distance. It is unfortunate that, notwithstanding all the preparations, the run was unsuccessful owing to the accidental presence on the track of a quantity of broken glass, wire nails and other tire enemies, and to a heavy rainstorm, amounting to a cloudburst, that made the track for the time being a circular canal and made fast running impossible. Another attack on the record, however, will be made by the same car and driver at the Empire track on June 16-17.

PECULIAR CASE NON-SUITED.

Machine Owner Sued for Damages Caused by Another in His Car.

Special Correspondence.

SEATTLE, WASH., May 26.—In the interesting case of Woods vs. Polson, tried here this week, the plaintiff was non-suited on the ground that the evidence failed to show that the driver of the automobile was the servant or agent of Mr. Polson.

The facts in the rough were that some time last October Mr. Polson either loaned his machine or turned it over to a repairer for examination and repairs, telling the man that in an hour or so he would return and get the car at the man's shop. The man, however, drove around the city of Hoquiam, in this state, and when turning from one street into another he encountered a woman and child crossing the street diagonally. In order to avoid running down these people he made a sharp turn, intending to cross the corner of the street over the sidewalk and into the street which he had just left.

There was plenty of room for the machine to pass between the corner of the sidewalk and the front of a store that stood on the corner, but in making the turn, on account of the speed or for some other reason, the right wheel struck the curb of the sidewalk and swung the machine around into the door of the store, crushing the legs of a man who was standing in front of the store and pinning him to the door jamb.

The injured man, Woods, sued Mr. Polson, owner of the car, for $25,000 damages and $451 medical expense but brought no suit against the driver. Austin E. Griffiths, of this city, was attorney for the defendant.

A company is being formed in the Island of Malta for the purpose of establishing lines of motor buses between points in Malta not already reached by trolley lines. A garage and repair shop will be built, in which charging and repairing facilities will be provided.

Municipal Vehicles in the City of Paris.

Automobiles Substituted for Horses in Many Departments with Satisfactory Results—Motor Boat Used Also.

From Our Own Correspondent.

THE fact that time is money seems to be forcing itself on the minds of the officials of the good old city of Paris. Their proverbial calm has been destroyed by the advent of a disturbing factor—the automobile. They have decided to replace the noblest of beasts, the horse, with motor vehicles wherever possible, and have commenced by purchasing automobile watering carts, dust carts, post-office vans, fire engines and other machines of a minor nature.

The street watering bill of the city of Paris has been pretty high, especially since the advent of the bicycle and the automobile. Taking, for instance, the Avenue de Bois de Boulogne, one of the favorite Parisian drives. In order to keep down the dust, it was found necessary to water this macadam highway five times a day, twice in the morning and three times in the afternoon; and for this purpose two systems have been tried. First, the sprinkling was done with hand hose, and later four-horse sprinkling carts were adopted. Both these systems were found faulty for the reason that if sufficient water was used to lay the dust until the next watering, pools formed, which were not only intensely disagreeable to the users of the street, but had a very bad effect on the road, washing the top dressing away from the stones and loosening the latter. Also, the watering was very expensive; and it was further decided that to obtain the best results there should be at least five waterings every afternoon instead of three—an impossibility with the old systems. But the city fathers rose to the occasion and laid before the firm of De Dion & Bouton the following statement of their requirements:

"A motoring water cart was to be supplied that would perform its work at approximately the speed of the horse-drawn carts already in use, about 9 kilometers an hour. It should water one-half the width of the avenue at one passage; to do this the spray must be 8 meters wide, the quantity of water spread per square meter being about half a liter. The avenue is 1,200 meters long, and has a water-post at the middle of its length, where the cart fills up. The tank of the cart must have a capacity of 5,000 liters (five tons), to enable it to water one-half the avenue by going from the middle towards the end and back, up one side and down the other.

The cart furnished is illustrated in Fig. 1; it is driven by a 35 horse-power De Dion-Bouton steam engine of the compound type;

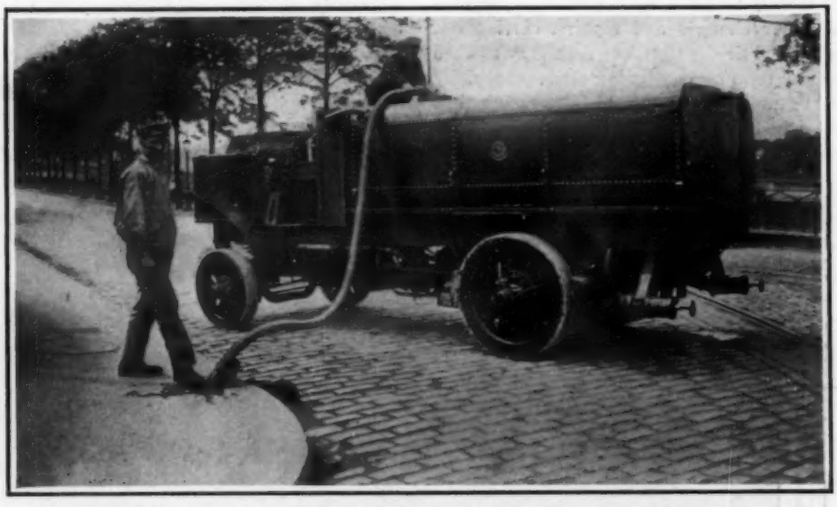


FIG 1—PARIS STEAM WATERING CART, CONVERTIBLE INTO GARBAGE WAGON.

two gear ratios are provided, giving speeds of 8 kilometers and 12 kilometers an hour at normal engine speed. By throttling, the speed is regulated to 9 kilometers, the normal rate; the motor is about 10 horsepower "stronger" than the actual work requires, leaving considerable surplus power for emergencies. With supplies for the engine and empty sprinkling tank, the machine weighs seven and a half tons, the five tons of water bringing the total working weight up to twelve and a half tons. The main tank can be filled in six minutes, and the entire operation of watering the avenue, including the filling of the tanks, requires thirty minutes.

The engine is hung low under the frame near the rear wheels (see Fig. 2). A single combination casing serves for the engine crankcase and the casing of the transmission and differential gears. Universal jointed shafts drive from each side of the differential to the road wheels, through hollow sleeves. The rear axle construction is similar to the construction adopted on the De

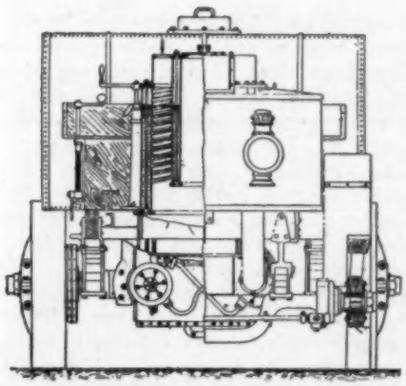


FIG. 3.—FRONT OF CART.—BOILER PARTLY IN SECTION.

Dion pleasure cars, except that it is, of course, very much heavier. Steam is generated in a De Dion vertical tubular boiler placed in front of the driver's seat, the fuel used being coal, which is fed to the fire-box through a central opening in the top of the boiler. The boiler is shown partly in section in Fig. 3, which also shows the front axle construction.

Two sets of brakes are fitted; one of the common shoe type, acting directly on the steel rims of the rear wheels, and the other a form invented by Lemoine, of steering knuckle fame. In this brake a flanged drum on each rear hub is surrounded by a series of wood blocks, which may be forced against the drum by tightening a stout cable wrapped around the blocks. This breaking system is used by the French artillery and by all French public road vehicles. The wheels are of a very heavy artillery pattern, of wood. A most interesting method of driving is adopted, which may be described as an extension of the well-known method of live axle drive, in which the wheels are driven by castellated caps connecting the outer ends of the shafts with the wheel hubs. In the watering cart, however, the cap is replaced by a steel casting having four radially projecting arms of forged steel, which are bolted directly to the felloe of the wheel at their outer ends, thus giving a drive directly from the axle to a point very close to the road surface, and avoiding the necessity of transmitting the propulsive power through the spokes and hubs of the wheels. Fig. 4 shows clearly the arrangement of the driving gear, one side being shown in section. Steering is done by a worm and segment gearing, similar to that used in pleasure cars, but much heavier, and giving a very great reduction between the steering wheel and the road wheels. Extremely stout steering knuckles, made from nickel steel, are fitted. The chassis as a whole gives an impression of strength and completeness, and the care which has been taken with every detail is most apparent.

The great tank is built up of sheet steel; it is connected with the supply tank for the boiler in such a way as to keep it always filled automatically. Gravity alone is not relied upon to sprinkle the water on the road; a centrifugal pump *P*, Fig. 5, similar to the De Dion circulating pump, but much larger, takes the water from the tank at *B* and delivers it to the sprinklers, or by changing the valve *R*, to the pipe *D*, which returns the water to the tank, cutting the sprinklers out of the circuit. Valve *R* is also connected with the filling system, so that the pump may be used to hasten the flow of water if the pressure of the supply is too low for promptly filling the tank; and it can even be used to pump water from a lower level, if no supply under pressure is available.

Sprockets and chains drive the pump from one of the live shafts, the gearing being arranged to bring the pump speed up to about 900 revolutions a minute. The valve *R* also regulates the quantity of water sent to the sprinklers, the surplus water, when the sprinklers are partly cut off, returning to the tank through the by-pass.

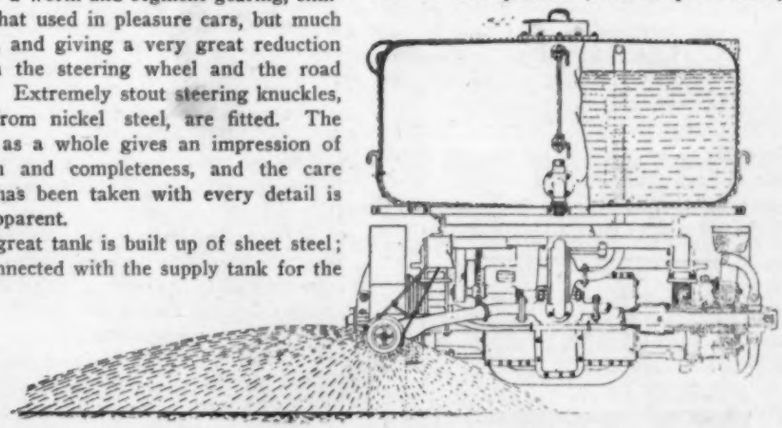


FIG. 4.—REAR ELEVATION, SHOWING DRIVING MECHANISM PARTLY IN SECTION

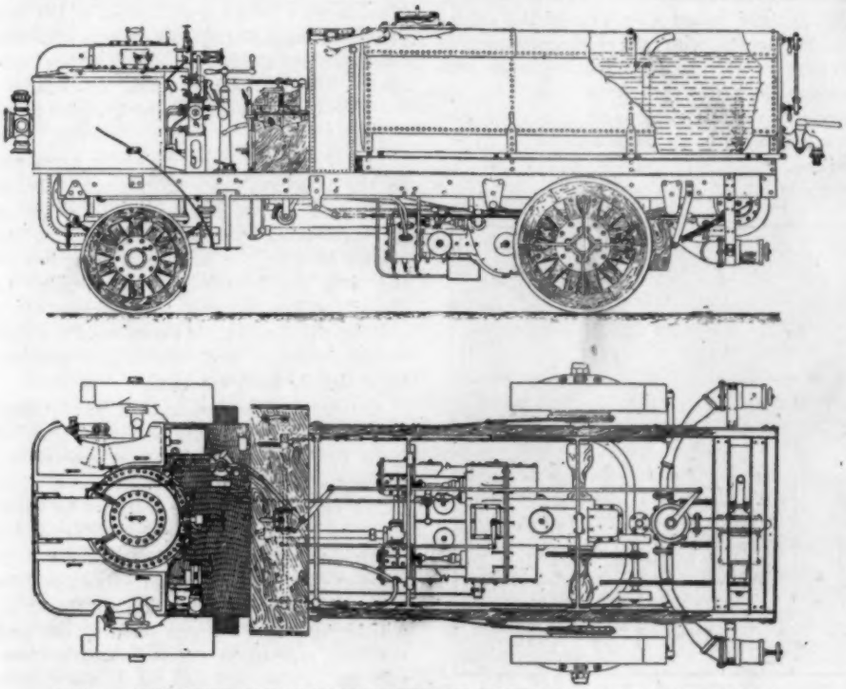


FIG. 2.—ELEVATION AND PLAN DRAWINGS OF WATER CART PARTLY SECTIONED.

Fig. 6 shows the construction of one of the two sprinklers; *M* is a tubular casting, through which the water is led to the sprinkler proper, finding its way around the edges of the plate *T*, and finally out through the perforations in the sprinkler. By means of the hand-wheel *R* the piston *P* may be made to cut off any part or all of the sprinkling holes. The object of the sliding plate is evidently to ensure the slide holes of the sprinklers receiving as good a supply of water as the bottom holes, toward which the water would naturally gravitate if left to itself. The great advantage of the centrifugal water pump driven from the shaft is that it proportions the amount of water delivered to the speed of the machine, thus avoiding the formation of puddles in the road, which would occur if the cart were driven very slowly with the water running full head. Either sprinkler may be cut out, when passing other road vehicles, for instance, by valves controlled from the driver's seat. The sprinklers are slightly less than two feet from the road surface.

The running expenses for this machine for one day are as follows:

	Francs
600 liters of coke.....	9.00
Wood for starting fire....	.56
Oil and grease.....	1.50
Driver's wages.....	9.00
Total daily expense.....	20.00=$4.00

The cost of watering by the hand hose method was 31 francs a day, while the horse-drawn watering carts did the work for 38 francs 40 centimes a day, the cost of water not being considered in either case.

To the cost of watering by steam must be added the upkeep of the big machine, repairs that cannot be made by the driver, and 3,600 francs ($720) per year, which is twenty per cent. of the original cost of the machine, which was 18,000 francs ($3,600). As the machine is used only seven months of the year, owing to winter and rainy periods, the cost of a day's work, everything included, comes to 37 francs 40 centimes, as against 38 francs 40 centimes for the four horse-drawn sprinklers; in addition to the slight gain in daily cost, the motor machine does the work much more satisfactorily than the older apparatus.

That does not end the story, however. In order to make use of the machine during the five months when it is not required for watering the streets, the tank is removed and a sheet steel body attached for carrying

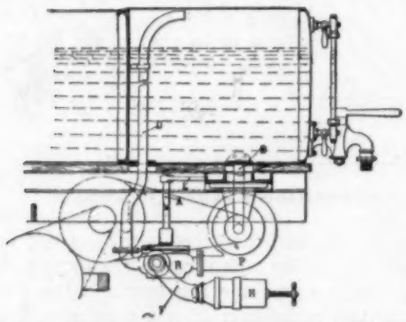


FIG. 5.—REAR END SHOWING DISTRIBUTING PUMP.

dust and refuse, as shown in Fig. 7. While this new scheme has only been used for a short time it is expected that it will reduce the cost of watering to 30 francs ($6) daily, which is cheaper than any known method of street sprinkling, being a franc a day cheaper than the hand hose method, besides being immeasurably superior. As a refuse cart the machine saves a very great amount of time over the horse carts, doing the work

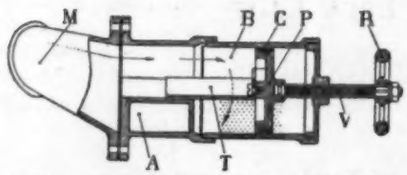


FIG. 6.—SECTION THROUGH A SPRINKLER.

very cheaply and satisfactorily. Another advantage, much appreciated by the people, is the fact that the machine is quiet in its work, while the old carts made a deafening racket as they bumped along.

(To be continued.)

Foreign News Notes.

Some brilliant fetes and receptions will be given in Paris this month by the A. C. of France in honor of the visit of King Alfonso of Spain to the French capital. A unique event will be the kilometer race in the Bois de Boulogue, this being the first time that an automobile race has been held at the doors of Paris. The vehicles taking part will belong to the constructors having engaged cars in the elimination trial for the Gordon Bennett race, each firm having the right to enter one car. A gold medal, known as the King of Spain's prize, will be offered to the winner, and in addition a silver medal will be presented as a souvenir to each competitor. The first two entries are those of Albert Clement, with his Gordon Bennett Bayard-Clement car, and Hémery, with his Darracq racing machine. A battle of flowers and competition for the best decorated automobiles will also be held, reserved for touring cars.

A touring competition that proved in a most brilliant way the powers of endurance and the regularity of modern cars was that for the Loiret Cup, one of the events in connection with the Orleans meet in France a fortnight ago. During seven successive days the cars were sent away on runs in various directions, the total distance covered being 2,000 kilometers (1,250 miles). Six cars started on this trying test, and all of them held out to the end of the fifth day. The cup was won by Cormier, who piloted a 10-horsepower De Dion-Bouton car. Second place was taken by Montariol with a De Dion-Bouton of 8-horsepower, having the almost unbelievable record of but three minutes' stop on the total distance of over 1,250 miles. Together the two De Dion-Bouton cars had against them but sixteen minutes' stop for the whole seven days. A Boyer car, driven by Henri Loote, took third position. This vehicle ran the De Dion cars very close, but on the sixth day it was stopped by the roadside for six hours for repairs to injuries caused by a deep rut.

Whilst on his way to Clermont, René de Knyff, president of the Sporting Commission of the A. C. F., recently met with a rather serious accident. Traveling at a high speed, he suddenly found the road obstructed by a cow. He was about to pass between it and the footpath, when the woman guarding the animal rushed across the road. To avoid hitting her, M. de Knyff swerved his car around, ran into the cow, killing it on the spot, and was thrown out of the vehicle with such violence as to break his collar-bone and receive injuries to several ribs. A journalist who was with him at the time also had his collar-bone broken. M. Knyff is progressing favorably and his complete recovery is only a matter of time.

The Ladies' Automobile Club of London is promoting a club tour to the Auvergne circuit on the occasion of the Gordon Bennett Cup race.

The question of the present ambulance system is to be discussed in London this month, when Sir William Collins intends to submit a plan to do away with the horse-drawn vehicles and replace them in inner London with motor ambulances, which not only work quicker in an emergency, but also take up much less room at the stations. Should the plan pass, Sir William hopes to have the cars at work within three months.

Two Paris-to-the-sea auto-boat races are on the program, both unfortunately being announced for the same dates. Neither of the promoting parties being willing to change its date, the A. C. of France had to step into the breach and has decided to give its official support to the one organized by the *Journal de l'Automobile*. Five racing launches and twenty-five cruisers have already been entered.

The cross-channel auto-boat race organized by the A. C. F. will be run on July 15 from Boulogne to Folkestone and return without any stop in the English port. The total length of the course will thus be about 59 miles. There will be four classes for racers, from 21 feet to 82 feet, and the same number of cruisers, with an extra class for fishing boats. An exhibition of the boats will be held at Boulogne on the 14th, and the races started on the 15th, weather permitting. Prizes are offered to the aggregate value of $10,000.

FIG. 7.—PARIS WATERING CART FITTED WITH SUBSTITUTE BODY FOR GARBAGE.

Up Mt. Hamilton to Lick Observatory.

Special Correspondence.

SAN FRANCISCO, May 24.—The opening of all the roads of California to automobiles by the new state law, offers an opportunity for the use of self-propelled machines on some of the stage lines in California which should not be overlooked. California is a state of magnificent distances, and the difficulties of railway construction and maintenance make necessary the use of many stage lines. Some of these, such as the Yosemite and Mt. Hamilton lines, are largely for the accommodation of pleasure seekers, while a much larger number of the stage lines are the only means of public conveyance into wealthy mining and agricultural districts. Most of these lines extend over a mountainous country, and although the roads are in most instances kept in excellent condition, the severity of the haul upon horses has made the maintenance of the routes an expensive matter.

The road up Mt. Hamilton to the Lick Observatory, twenty-four miles from the city of San Jose, and sixty-six miles from San Francisco, offers one of the best possible opportunities for the establishment of an automobile stage line. The practicability of this road for automobiles was demonstrated shortly after the new state law went into operation by T. George Gow and a party, including W. R. Densmore, of the Packard Motor Car Company, A. B. Costigan, of the Packard Agency in San Francisco and THE AUTOMOBILE correspondent. The party left San Francisco in Mr. Gow's 28-horsepower Model N Packard, drove to San Jose, had luncheon at the Vendome, and made the run to the top of Mt. Hamilton in less time for the entire trip than the stages take for the trip from the Vendome to the observatory.

Previous to this trip of Mr. Gow's car, automobiles had been kept from the Mt. Hamilton road for two years, largely through the influence of the stage company. The stages make the run in from six to seven hours with four and six-horse teams, changing horses twice on the route up the mountain. Mr. Gow's party made the run in an hour and fifty minutes without difficulty. The roads are in excellent condition, and while the grade is as high as 15 per cent. in some places, the entire run up the mountain was made on the second speed. The stage company carries an average of 6,000 passengers a year up to the observatory, 4,200 feet above the sea level, and makes a charge of $4 for the round trip. The charge is $5 for Saturday night trips, when the visitors are given a chance to view the heavens through the big telescope.

VIEW FROM LICK OBSERVATORY ON MT. HAMILTON OVERLOOKING CLOUD FILLED VALLEYS. Note Winding Road up the Mountain in the Foreground, which Leads Out Through Gulch on Right.

ON ROAD FROM SAN JOSE TO THE LICK OBSERVATORY.

The trip itself is one of the most charming in California, when it can be taken in reasonable time. As a stage run in the summer, it is long, hot and tedious, although passing through a delightful and picturesque country. With an automobile line, however, the pleasures of the run would be so much greater that the travel would be largely increased. The stage company now has a monopoly of the travel, as the drive is so long and hard for horses that livery teams cannot compete, and is using every means to keep automobiles off the route. After the run made by Mr. Gow and his party, a story was started and published in the California papers on the authority of the correspondents in San Jose, to the effect that the automobile had frightened teams and had driven one horse and buggy over a bank, causing such injury to one of the occupants that his life was despaired of. It was also stated that the Gow party was

LICK OBSERVATORY ON MT. HAMILTON, CALIFORNIA, 4,200 FEET ABOVE SEA LEVEL.

chased by the sheriff and a mob of wood choppers and barely escaped. Nothing of the sort happened. The trip was made without incident and the two stage teams passed, and one or two other teams, showing no signs of timidity, except in one instance when the car was halted until a restless horse had fully calmed down. The wild yarn was very evidently started by those interested in keeping automobiles off the route.

German Patent Laws.

Inventors will be interested in the following information concerning German patent laws, given by John F. Winter, United States Consul at Annaberg, Germany.

An American patent to be valid in Germany must be filed simultaneously in both countries, the German patent office furnishing the blanks upon which application must be made in writing. Each application must be made on a separate blank, the first part of the application forming the petition and the last part the specification. Alterations are allowed at any time previous to the issuance of the patent.

A preliminary examination is first made, and the application is grantable if it does not conflict with any previous application. On publication in the official government organ, the *Reichsanzeiger*, the patent acquires provisional validity. Such publication can, however, be postponed for six months at the request of the patentee.

Should the application be rejected, appeal may be taken on payment of $5; the appeal must be made within one month of the rejection. If the appeal is sustained, the $5 will be returned. Applicants living abroad are required to give security for the expenses of legal proceedings in case of appeal, the security being arbitrarily fixed by the proper authorities. Appeal may also be made against the decision of the patent office authorities and carried to the Reichsgericht, in Leipzig; such appeal must be filed within six weeks of the patent office decision.

A fee of $25 must accompany applications for full term patents, to run fifteen years. A power of attorney must also be sent, together with two sets of drawings, one on bristol board and the other on tracing cloth or tracing paper.

The patent must, if granted, be worked within three years. A fee of $28 is required when the patent is granted. To assign a patent costs $10.

An automobile stage line is being established between Las Vegas, New Mexico, and Beatty, Nevada, by way of Goldfield. A company has been formed for the purpose, and four heavy automobiles purchased. A trial trip has been made, and the distance covered—about 200 miles—in one-fourth the time now occupied by the horse-drawn stage. About half a dozen vehicles will be put in operation, and a nominal fare will be charged.

St. Louis Auto Police.

Special Correspondence.

ST. LOUIS, May 27.—Because of the increasing number of high-speed automobiles in St. Louis, the police automobile squad is almost unable to catch and arrest offenders against the speed ordinance, and the city authorities will probably replace the police department cars with machines of greater power and speed as soon as an appropriation can be made.

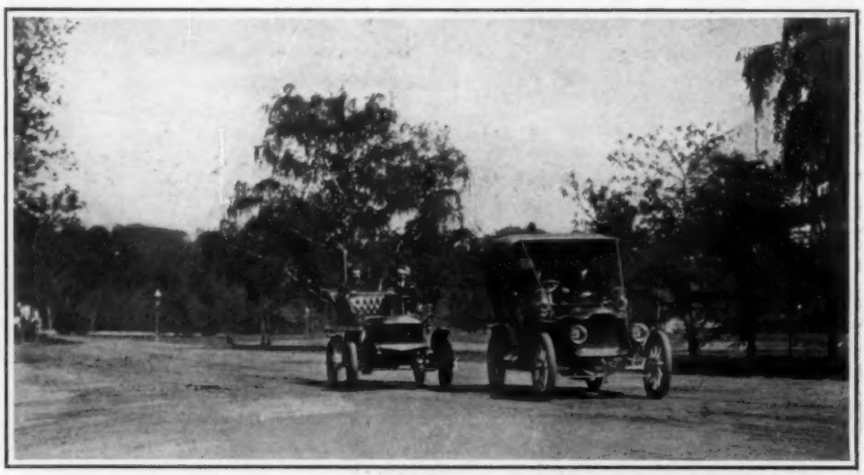
About the only chance the police now have to arrest the driver of a machine who exceeds the speeds limits is to catch a glimpse of the license number of the fleeing car and take the offender into custody at his home later.

The police department last year purchased a 12-horsepower, single-cylinder automobile with a maximum speed of thirty miles an hour to be used for catching automobilists who persisted in breaking the law on the boulevards and park drives of the city. At that time it could catch almost any machine in the city except racing cars, and during the year forty arrests were made. But this year there are many new cars in town that can make the police auto look like a turtle in a race with a hare on the boulevards, and up to-date there have been but twelve arrests this season. Therefore, Doctor Faulkner, superintendent of police, declares that a much faster machine is required by the department and will try to have a bill passed by the municipal assembly appropriating the necessary amount for the purpose.

Most of the speeding is done on Lindell and Washington boulevards, although sometimes a chauffeur will try to clip seconds off the record in Forest Park. In the evenings, from 5 o'clock to 9 P. M., the smoothly paved boulevards and drives are thronged with carriages and automobiles of every description and the auto patrol is kept busy. The police auto lies in wait around bends of the drives and sometimes the squad "spots" from behind a clump of shrubbery in the park until some car comes tearing along at two or three times the legal rate. As it passes, the patrol starts in pursuit, and if possible overhauls the offender. The police car is fitted with a speed register so that the officers are able to tell how fast both cars are going, and can produce irrefutable evidence when the automobilist is haled into court. The police are not offensively strict in enforcing the law; if they catch a driver who is committing his first offense they do not make an arrest, but merely warn him against repeating it.

With the advent this year of high powered machines, not a few of the drivers whom the police squad starts out after succeed in outrunning the small car, unless they run into a "pocket" of other vehicles.

Many of those who indulge in speeding are among the wealthiest young men of the city, and frequently they are accompanied by young women. One young society man, the son of a wealthy broker, has been arrested four times this year; he seems to think it is great sport to measure the speed of his car with the city "skidoodle wagon," as the police automobile is termed. When arraigned in court, he explains that his car is geared so high that it is almost impossible to make it run slow. The judge invariably replies by imposing a fine of $25, which the young man pays with a smile.



ST. LOUIS AUTO POLICE SQUAD OVERHAULING SPEEDING MACHINE IN FOREST PARK.

AUTO BOAT CUP RACES.

Auto-boat races will be held at Le Havre and Trouville between July 28 and August 5. The events include an exhibition, a race for power boats, for which $1,000 is offered in prizes; the Gaston Menier Cup at Trouville, and the races for the Anthony Drevel Cup off the same port. Arrangements have been made by which the competitors in the A. C. F. industrial vehicle competition, at present being organized on an elaborate scale, will arrive at Trouville during the nautical week and remain on exhibition in the town for a day or two.

Manhasset Bay Auto-Boat Races.

THE Manhasset Bay Yacht Club opened the auto-boat racing season about New York with a race May 30 under the rules of the American Power Boat Association, the courses being from off the clubhouse in Manhasset Bay out around various marks on Long Island Sound. The weather was favorable, the day being clear, with no wind in the morning, though a fresh southerly breeze sprung up after the start; all conditions were favorable for a race, but the attendance was smaller than at the similar event of last year.

The leading entry was the new *Panhard* exhibited last winter at the Sportsman's Show, 40 feet over all, 5 feet 6 inches in breadth and fitted with a 60-horsepower motor. Her only competitor was the *Shooting Star* of last year, refitted with a wooden hatch in two halves over her motor and a canvas apron for the cockpit, her topsides being white instead of the natural color.

The second class included one of the Smith & Mabley Simplex yacht-tenders, as shown at the Sportsman's Show, the new Lozier launch *Beldame*, and the yacht tender built by the Gas Engine and Power Co. and C. L. Seabury & Co. for Commodore Bourne, also shown last spring. The *Beldame* is a very sensible and serviceable launch for day use and short cruises, 53 feet over all, 7 feet 6 inches in breadth and drawing 2 feet 2 inches over her screw. She is fitted with a hunting cabin forward, with toilet room and two long transoms, the motor is placed amidships under an extension of the cabin roof, with open sides; a large cockpit aft is sheltered by a canvas awning. The motor is a four-cylinder, four-cycle, seven-inch bore by eight-inch stroke, giving 55-horsepower at 500 turns. The inlet valve is regulated by an adjustable ball governor. The stem is slightly curved with a forward rake, and a round and ugly torpedo stern and poor sheer detract from the appearance, but apart from this the launch is a great improvement on the up-to-date auto-freak.

The *San Toy* was raced last fall and is already known. Against her was a new open speed launch, the *Pike*, designed and built by Joshua Bedell, of Glenwood, L. I., with a Mohler & Degress four-cylinder motor.

The new one-design class of the Knickerbocker Yacht Club, the *Sea Skunks*, was represented by twelve out of the full number of fifteen boats. This is claimed to be the first one-design class of power boats, but it is likely to lead to others. The design is the work of Charles Coughtry, one of the old-time Corinthians of the Knickerbocker Yacht Club, once well known both as a racing man and cruiser in the days of sail. The boats are staunch little craft, 21 feet over all and just under 5 feet in breadth, entirely open, with square transoms, and fitted with a new gasoline motor of 5-horsepower made by the New York Kerosene Oil Engine Co.; a single-cylinder, two-cycle motor with cylinder, head and upper half of crankcase in one casting. The hulls are well built, with a single thickness of 5-8-inch white cedar and mahogany wale and transom.

The start was set for 3 P. M., and F. A. Hill and H. H. Hogins, Jr., of the race committee, with Mr. Belknap, the measurer, were on hand in good season, but there were the usual delays, so that it was half an hour later before the first class got away. The new *Panhard* had run up from Bayonne in the morning, a distance of thirty miles; she exhausts through a very short stack over the motor and just forward of the cockpit, and in running the exhaust gases are thrown directly in the faces of the crew. Why this was not discovered before and remedied does not appear, but by the time the boat reached Manhasset Bay the three men in her were nearly blind.

The allowances were counted on the start, *Shooting Star* being first away at 3:30 P. M., with *Panhard* 4 minutes 16 seconds later. The latter was some three minutes late in crossing, but ran very fast when well away. The start of the *Sea Skunks* was a very pretty sight, twelve of them going over well together. With them was the Red Cross launch *Kindergarten*, an experimental hull built to test the first motor, of the same dimensions as the class, but with straight sides and almost flat bottom; she serves as convoy and repair ship to the fleet.

The course for the larger launches was out across the Sound and around the Scotch Caps buoy, fifteen miles, while the smaller ran a course of seven miles. The *Panhard* was the first in, but when within fifty yards of the line her motor was stopped and she was allowed to run in slowly under her headway, the helmsman being unable to see clearly enough to make it safe to run at speed. The *Shooting Star*, following a couple of minutes later, steered a very wild course as she came to the line. The *Sea Skunks* were fairly well bunched at the end except the last, whose shaft had been bent in the morning. The winners in the first two classes were *Panhard* (Time, 50 min. 58 sec.); and *Colonia* (Time, 57 min. 38 sec.); the *San Toy* and *Pike* have not been measured yet.

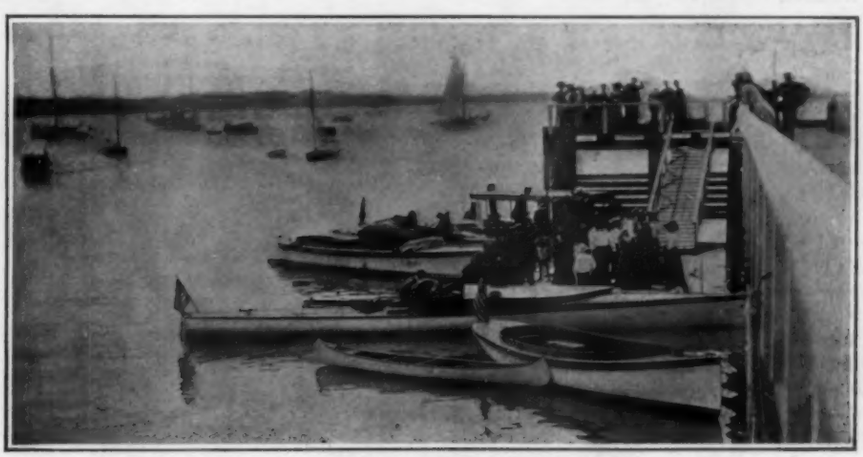
Vice-Commodore Clarkson Cowl entertained the committee on his steam yacht *Ardea*.

Boat Races on the Hudson.

The annual regatta of the Columbia Yacht Club of New York is now purely a power-boat event, this club being at the present time the leading patron of power-boat racing about New York. While by no means what might be expected in the first week in June in a season in which the power-boat is expected to be the main feature, the turnout was decidedly better than that of Decoration Day. The larger speed class was represented by but two boats, the new *Panhard II.* and *Challenger*, with *Colonia*, *Mercury* and *Shooting Star I.* in the smaller class; but the fleet of eighteen launches included a number of service boats, such as the cabin cruiser *Queen Bess* and the *Simplex* launch tender, the interest being thus divided among the different types and sizes. This in itself is a matter for congratulation, as the future of launch racing evidently depends on the general participation of all classes rather than on a single class of freaks.

The day was clear and pleasant, with a fresh southwest wind up the river, the start being made on the last of the flood. A good assemblage of spectators was present, either on the many yachts of the Columbia fleet anchored in the stream or on the piazzas of the clubhouse; above on the Riverside Drive was a string of automobiles, awaiting their owners below.

The course was a six-mile triangle, starting off the club pier, thence past a mark off Fort Lee on the Jersey shore and down



AUTO BOATS AT PIER OF MANHASSET BAY YACHT CLUB BEFORE RACES.

the river to a second mark off Sixty-sixth street and home; some of the classes ran this three times and others ran it twice, making eighteen and twelve nautical miles respectively. The launches were started according to their allowances, thus making the first boat in the winner. The winners were: *Panhard II., Colonia, Argonaut, Queen Bess, Simplex* and *Reliance* in their respective classes.

Scottish Reliability Trials.

Attention of the British automobile circles was centered during the latter part of May on the annual four-days' reliability and hill-climbing trials of the Scottish Automobile Club, which proved to be the most successful ever held in the British Isles.

Of forty-four cars entered, only one failed to start; and of the forty-three that started, all but seven completed the full run of more than 600 miles over all sorts of winding and hilly Scotch roads. Eleven of the thirty-six that finished at the end of the fourth day made perfect non-stop runs, not even stopping on account of tire troubles, for they had none. Although stops occasioned by tires did not disqualify the cars for non-stop certificates, all tire stops were recorded. Four cars made non-stop runs with the exception of stops on one day each for tire repairs, making a total of fifteen first-class certificate winners.

The course of the trials is shown in the accompanying map. The total distance covered was 602 1-8 miles, divided into four daily stages, as follows: First day, Glasgow to Edinburgh (luncheon), to Dundee, 136 3-8 miles; second day, Dundee to Braemar (luncheon), to Aberdeen, 111 3-8 miles; third day, Aberdeen to Grantown (luncheon), to Pitlochry, 181 1-4 miles; fourth day, Pitlochry to Dalmally (luncheon), to Glasgow, 166 1-8 miles. Times were taken on the two hills at Glenshee and Aberfeldy, but although recorded, they do not necessarily decide the awards, although having an important bearing on the scores.

From Motoring Illustrated.

SCOTCH RELIABILITY TRIALS COURSE.

Of especial interest to American automobilists is the fact that one of the cars that made no stops whatever was a 9-horsepower Cadillac. The only other single-cylinder car making a similar record was an 8-horsepower De Dion, although a 6-horsepower Wolseley made a non-stop run except for tire troubles, that delayed it 1 hour 12 minutes. Besides the Cadillac, there were two other American cars in the trials, a 10-horsepower Ford and a 20-horsepower Ford. The former made non-stop runs on two days, but had forty-three minutes' delay on another, and stopped four minutes on the third day because of trouble with the trembler. The large machine was withdrawn on the last day.

In the accompanying table are given the names of the fifteen non-stop certificate winners, together with their aggregate times for ascending the two hills mentioned.

Twenty-eight of the forty-four competing cars were of British manufacture, and of the eleven actual non-stop cars six were English. All of the cars that made non-stop runs except for tire repairs (which were non-penalized stops) were English (an interesting and probably instructive point), so that of the fifteen first-class certificate winners ten were English machines.

Just how much more the English entries were delayed on the road by tire troubles than their foreign competitors is revealed by the fact that the total time for all tire stops for English cars was 6 hours, while the aggregate for all other cars for the same cause was only 3 hours 8 minutes. Had tire troubles been penalized, as many are now of the opinion they should be in such contests, the four English cars would not have figured among the first-class certificate winners, and the proportion would have been six English cars to four French and one American.

The troubles recorded against all of the cars in the trials, and the aggregate number of minutes charged for them, are as follows: Tires, 548; ignition, 318; water connections, 220; muffler, 118; pump, 92; clutch, 79; carbureter, 85; replenishing, 54; spark plugs, 32; driving stops, 23; radiator, 21; hill stops, 18; chain, 16; starting engine, 10; engine overheated, 5; throttle, 3.

From Automotor Journal.

WAITING FOR START OF HILL CLIMB AT ABERFELDY ON LAST DAY OF SCOTTISH TRIALS.
First Car is the 9-Horsepower Cadillac, Winner Non-Stop Certificate.

Two French G. B. Cars.

Light weight is a striking characteristic of the Darracq racing car which is to take part in the French Gordon Bennett elimination trials, the machine weighing only about

CARS MAKING NO PENALIZED STOPS AND NO TIRE STOPS.

Car.	Nation.	H. P.	Cylin.	Time on hills.
De Dion	French	8	one	29:19
Cadillac	American	9	one	21:36 3-5
Albion	English	16	two	22:47
Mors	French	20-32	four	13:19 1-5
Germain	English	24	four	13:34 2-5
Thornycroft	English	24	four	12:27 3-5
Richard-Brasier	French	12	four	19:27 2-5
Belsize	English	30-40	four	14:35 3-5
Brooke	English	15-20	four	18:59
Vignot-Dequingand	French	20	four	14:29
Argyll	English	12-14	four	18:56 4-5

CARS MAKING STOPS FOR TIRES ONLY.

Car.	Nationality.	H. P.	Cylinders.	Tire Stops.	Time on hills.
Wolseley	English	6	four	1 hr. 12 m.	17:33 4-5
Beeston-Humber	English	16-20	four	21 min.	15:34 2-5
Ariel	English	20-25	four	24 min.	13:51 4-5
Gladiator	English	12-14	four	15 min.	16:41 4-5

DARRACQ 85-HORSEPOWER GORDON BENNETT RACER, WEIGHING 1,650 POUNDS—WAGNER AT THE WHEEL.

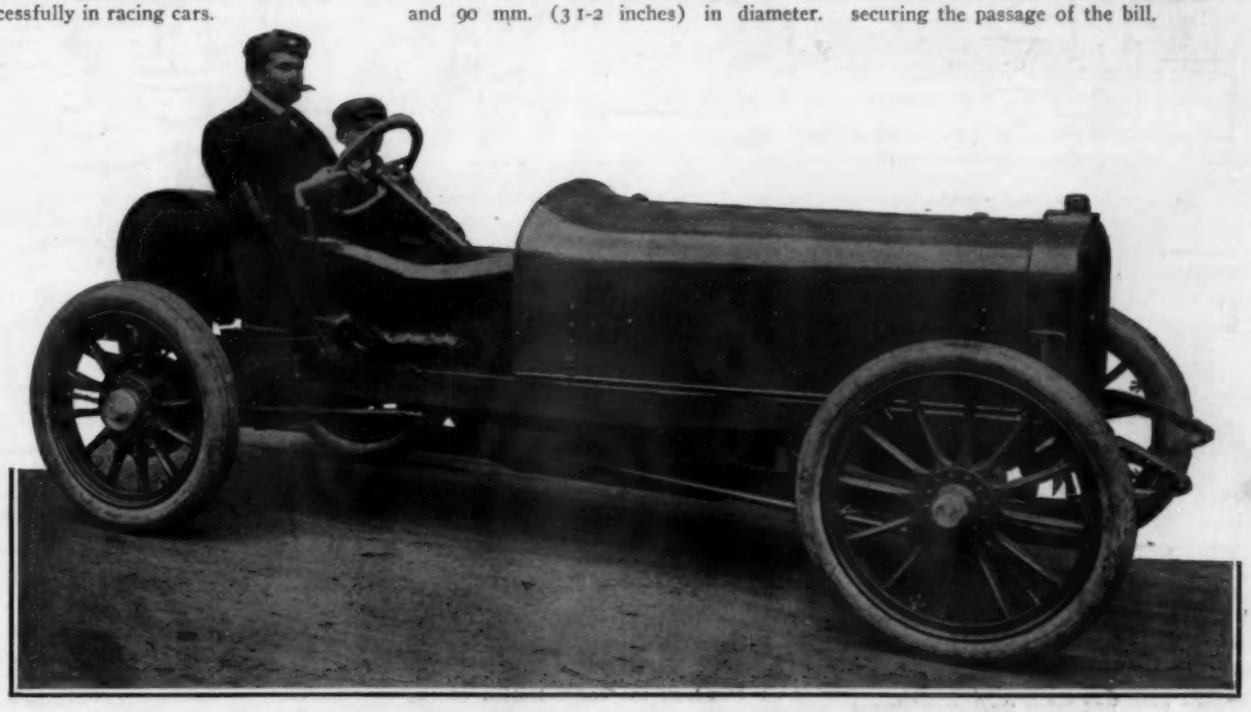
1,650 pounds. Notwithstanding this lightness, the four-cylinder motor is said to develop 85-horsepower. The cylinders have a bore of 160 mm. (about 6 1-4 inches), and a comparatively short stroke of 140 mm. (about 5 1-2 inches). All the valves are placed on the cylinder heads. Propeller shaft and bevel gear drive is adopted; the arrangement usually adopted, however, is departed from, the transmission gear casing being made part of the casing which encloses the bevel gearing on the live rear axle. The wheelbase is very short, being only 90 inches. The most striking feature about the cars is the use of wire wheels, which have been abandoned long since by the other makers. The Darracq concern has used this type of wheel extensively and successfully in racing cars.

The most noticeable outward feature of the 1905 Clement-Bayard car, which is a candidate also for the elimination trials, is the enormous length of its bonnet, which extends backward halfway to the rear wheels; the driver sits directly over the rear axle, with the large cylindrical gasoline tank at his back. The four-cylinder motor is stated to develop 125-horsepower at 1,300 revolutions a minute, having a bore and stroke of 160 mm. (about 6 1-4 inches), mechanically operated valves symmetrically disposed on opposite sides of the cylinders. Drive is by propeller shaft and bevel gears to the live rear axle. The rear wheels are 820 mm. in diameter (about 32 inches), and the front wheels 810 mm. in diameter; the tires are resepctively 120 mm. (4 -2 inches), and 90 mm. (3 1-2 inches) in diameter. The wheelbase is 108 inches and the tread 51 inches. A cellular radiator has been adopted this year, the tubular type, used on last year's racing cars, having been abandoned.

MICHIGAN GOOD ROADS LAW SIGNED.

Special Correspondence.

DETROIT, June 5.—Governor Warner has signed the "Good Roads" bill, passed by the Michigan legislature, appropriating $90,000 for the improvement of the highways of the state. This has long been agitated before various Michigan legislatures, but it took several years to make the lawmakers realize the importance of the work. Ex-Senator Horatio S. Earle was most instrumental in securing the passage of the bill.



CLEMENT 125-HORSEPOWER SHAFT-DRIVE CANDIDATE FOR THE GORDON BENNETT CUP—HANRIOT AT THE WHEEL.

Carbureter Functions Discussed.*

By MERVYN O'GORMAN.

Continued from page 639, issue of May 25.

PART II.

Tampering.—The number of ways in which the quality of the mixture has been "tampered with" is great, and an abstract of a few of these, together with some plans which have suggested themselves when searching for them, are here given.

It is only hoped that in one way or other, or in a simplified combination of several of the following systems, some ingenious persons may find comfort, inspiration, and some day, let us hope, success.

(I) Control the richness by hand throttling the air on its way to the jet.—Martini, 1903, Fig. 5.

(II) Control the richness by a spring valve or flap, which throttles the air on its way to the jet (Longuemare, old type) as speed increases.

(III) Ditto, unthrottled.—Rekto, Fig 6.

(IV) Control simultaneously by linked throttle valves, one on each side of the jet.—De Dion and Rossel, 1904, Figs. 8 and 9.

(V) Diminish the concentration of the air-blast (the injector effect) past the jet by a flybob governor acting on a cam of calculated profile.—Gobron.

(VI) Shunt some air away from jet by auxiliary valves, whose opening is controlled by the pressure of circulating water.—Napier.

(VII) Shunt some air away from the jet by auxiliary valves whose amount of opening depends on the increased vacuum at high speed as in the Krebs, Crossley, Rolls-Royce.—Rolls-Royce, Fig. 10.

(VIII) Let in air by way of a spring-controlled suction valve, which pushes a needle into and throttles the jet on opening.—Chenard and Walcker.

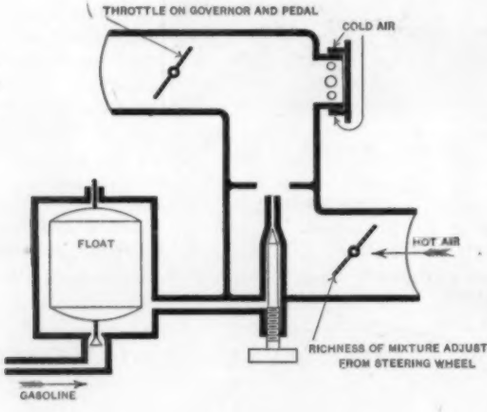


FIG. 5.—JENATZY-MARTIN.

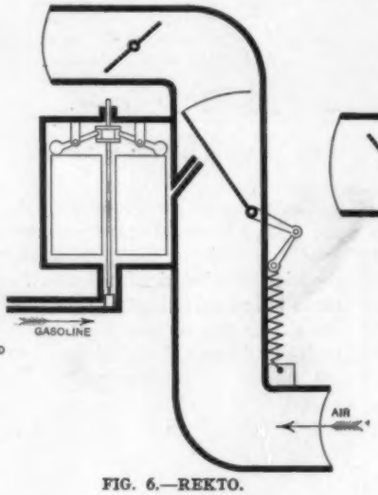


FIG. 6.—REKTO.

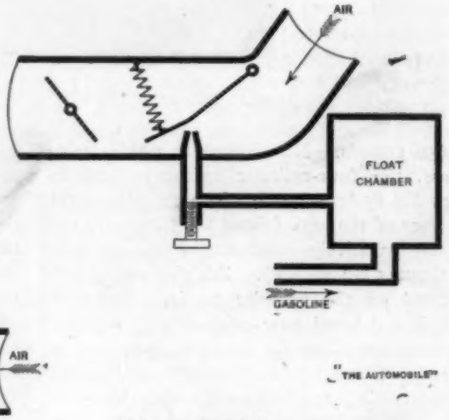


FIG. 7.—SHIPMAN.

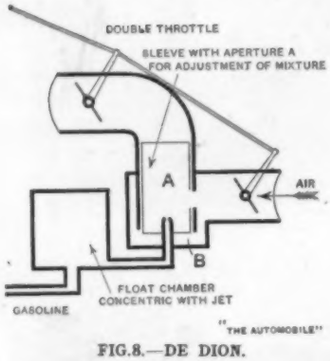


FIG.8.—DE DION.

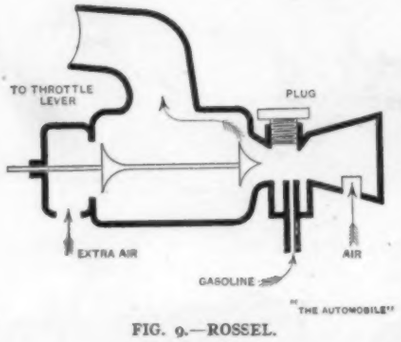


FIG. 9.—ROSSEL.

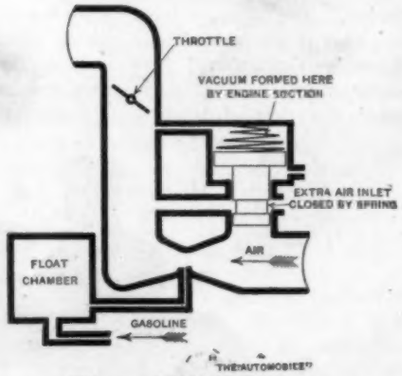


FIG. 10.—ROLLS-ROYCE, 1904.

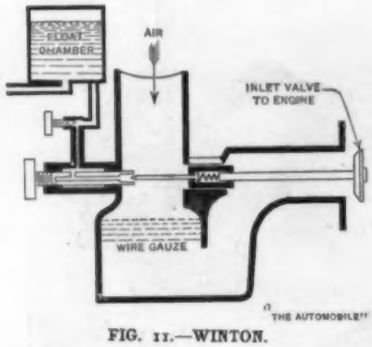


FIG. 11.—WINTON.

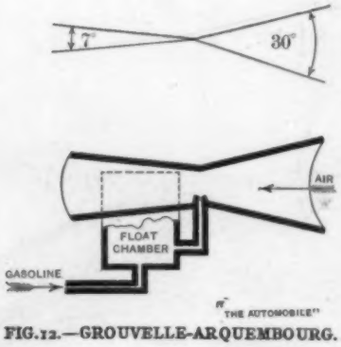


FIG.12.—GROUVELLE-ARQUEMBOURG.

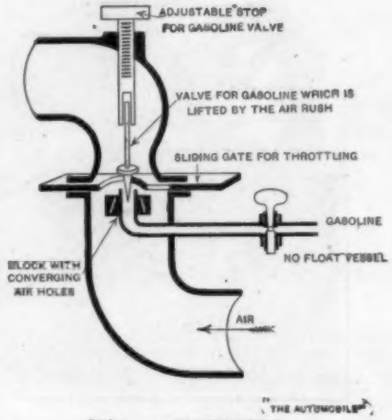


FIG. 13.—OLDSMOBILE.

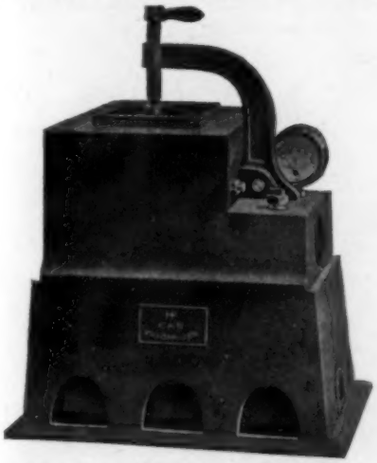
*From a paper read before the Automobile and Cycle Engineers Institute, Birmingham, England.

(IX) Cause the throttle lever to lower a cone on to the jet so as to increase the suction on the jet when throttle is being closed.

(X) Cause a diaphragm valve to lower a double cone on to the jet.—Crouan.

(XI) Throttle by varying the stroke of inlet valve and make the stem of inlet valve control a needle in the jet.—Winton, Fig. 11.

(XII) Cause two fluid jets to face each other in such a manner that they collide and so react as to prevent each other's increase in output when the vacuum increases. A slow stroke at full throttle would, however, not increase this collision, and the fuel flow would increase.—Brasier.



"H. F." VULCANIZER FOR ROAD USE.

(XIII) Control the opening of the jet by a combined aneroid and thermometer.

(XIV) Lower the level of liquid in the float chamber when the gasoline consumption becomes rapid, so that less comes out per stroke at high speeds.—De Dietrich, 1904.

(XV) Place the jet in such a chamber and in such a manner in the air stream that the suction diminishes with the speed.—Grouvelle-Arquembourg, Fig. 12.

(XVI) Employ two distinct carbureters, one adjusted for slow running and one for fast, and select proper one by hand in driving.—Bollée.

(XVII) Introduce a resistance to the flow of gasoline to the jet which operates chiefly as a loss of "head" when the time for taking the gasoline is small (high engine speed).—Sthenos.

(XVIII) Mechanically measure out the gasoline dose for each speed.

(XIX) Increase the inertia of the gasoline by closing the jet with a loaded needle valve.—Oldsmobile, Fig. 13.

(XX) Cause a jet of the "extra" air to be directed on the jet of gasoline and so choke it back.

(To be continued.)

The office of the German Automobile Club has been removed to Leipzigerplatz 16, Berlin, W.

Portable Vulcanizer.

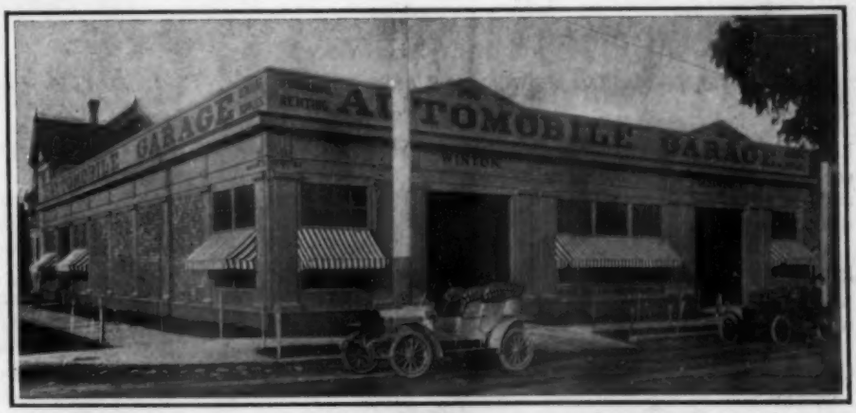
The difficulty of making satisfactory repairs to large tires when punctured or slightly damaged on the road, and the impossibility of making repairs either on the road or at home if the damage is serious, is well known to most automobilists, and is one of the most serious drawbacks to pleasure automobiling. While the old bicycle tire methods, on a larger scale, answer fairly well for small work of a more or less temporary nature, nothing short of vulcanization by accepted shop methods will answer for really permanent work of any kind, or for the execution of repairs to anything larger than a puncture. With a view to bringing about an improvement in this direction, several portable vulcanizers, suitable for carrying about in the car, have been placed upon the market, each being adapted for use of some special process, the manufacturers supplying raw rubber and other material suitable for use with their machines.

VULCANIZER PARTLY IN SECTION.

The illustrations accompanying this article show a portable vulcanizer brought out by an English firm and called the "H F car vulcanizer." The vulcanization of a tire repair is a decidedly delicate bit of work; for while a considerable degree of heat is required to cure the raw rubber used, any excess of the maximum allowable temperature will result in the rapid and permanent deterioration not only of the new nubber inserted for the purpose of making the repair, but also the old rubber in the tire and the fabric as well. Again, the heat must be uniform on all parts of the repair, or else there will be spots either burned or insufficiently cured, making the repair at best a very poor one, if not entirely useless.

In workshop practice the vulcanizer is always heated by steam, this method ensuring an even distribution of heat, and the degree of heat can be readily controlled by regulating the pressure—the greater the pressure the greater the heat. The H F vulcanizer provides, in a portable form, a steam generating plant, a heating surface for the tire and a press for keeping the tire against the heated surface while the vulcanization is in process.

The sectional view shows the disposition of the parts very clearly; the heat may be supplied by gasoline, alcohol or any convenient fuel, or gas may be used if it is available. The complete machine weighs 20 pounds; it is nine inches high and six inches square, and packs compactly into a carrying box with leather handles. By the use of this vulcanizer a rent or burst five inches long may be repaired on the road, and the manufacturers state that work done in this way will be not only smooth and neat in appearance, but strong and permanent, equal in every respect to work done in the best tire repairing establishments. A larger and heavier apparatus is made for use in garages. We are informed that the manufacture of this apparatus will soon be begun in this country by licensees.



The accompanying engraving shows the new garage of the Hugo Muller Motor Car Company in Oakland, California, which is the exclusive home of the Winton and Oldsmobile in the counties of Alamada and Contra Costa. This garage is situated on the corner of 12th and Madisan streets, the dimensions being 80 by 100 feet. It has just recently been completed and, for convenient arrangements, is said to be the most up-to-date garage in California. Mr. Muller is well known in Oakland, and has been in the automobile business for the past two years, and now holds the sub-agency for the cars named from the Pioneer Automobile Company of San Francisco.

Suggestions to the Inexperienced.—XIII.*

Details Wherein the Steering Gear of Automobiles Differ from Horse Drawn Vehicles—Various Forms of Knuckles.

By A. D. RIVER.

IT is obvious that the fifth-wheel steering gear, as used on horse-drawn vehicles, is impracticable for use on pleasure automobiles, and it was necessary to work out a steering gear that would reduce to a minimum the effort required to control the movement of the steering wheels and to hold them against the deflecting tendencies of shocks caused by obstacles or inequalities in the road. The stubs or "knuckles" upon which the front wheels run are pivoted on the ends of the front axle, as close as possible to the hubs of the wheels. Each wheel is thus free to deflect on its own pivot. As the wheels must move together in steering the car, an arm projects from each knuckle, either forward or backward, and the ends of the arms are connected by a link, so that both wheels move together. The connections between the steering knuckles must be of such a character that when the front wheels are deflected, as when the car is taking a curve, the axes of the two front wheels will intersect each other at the point where they both intersect the axis of the rear wheels, all the axes being produced until they intersect. The point of intersection will be the center around which all the wheels will tend to travel. This is approximately accomplished by setting at an angle the arms by which the wheels are turned; this is shown in Fig 1, *AA* and *BB* being the arms on the knuckles.

This angle cannot be arbitrarily determined, but will depend somewhat on the proportions of the wheelbase, the tread or distance between the wheels transversely, and the length of the steering arms. In ordinary cases, however, the axes of the arms produced are made to intersect midway between the front and rear axles when the wheels are pointing straight ahead; this is for arms which extend forward. When the arms extend backward their axes should intersect at a point about one-fifth of the length of the wheelbase forward of the rear axle, as the sketches, Fig. 1, shows.

A good deal of misconception exists on this point, it being generally believed that the axes of the steering arms should intersect at the center of the rear axle.

Various types of steering knuckles are shown in Figs. 2, 3, 4 and 5. Fig. 2 is what is called the Elliott knuckle, and is very widely used. The pivot is made integral with the stub on which the wheel runs, the yoke being attached to, or a part of, the end of the axle proper. This arrangement brings the pivot very close to the hub, and reduces the leverage on the parts. A modification of the Elliott knuckle is shown in Fig. 3; in this case the pivot forms part of the axle end, while the yoke is attached to the stub. This is called a reversed Elliott knuckle. Figs. 4 and 5 show knuckles of the Lemoine type, the form shown in Fig. 5 being that most used. In this arrangement there is no yoke as in the Elliott knuckle; the pivot, which may be made integral with the stub, passing upward through a long bearing in the axle end, a nut on the top end of the pivot keeping the parts from jarring apart.

Each of these types is made in a number of forms, and with many minor variations in shape and proportion, the kind of bearings used, which may be plain bushes, ball bearings or roller bearings. Sometimes the pivots are made hollow and filled with lubricant.

The steering pivot always is set at an angle, as is shown, in an exaggerated way, in Fig. 4. The angle is so calculated that the produced axis of the pivot will intersect the tire at or near the surface of the road. The result of this arrangement is that any shock sustained by the wheel in the vertical plane of this intersection will exert no leverage tending to deflect the knuckle and shift the wheel on its steering pivot, which would result in a sudden change in the direction in which the car was traveling, if the wheel or lever was not held firmly enough to resist the shock. With the inclined pivot used in all automobile steering gears there is no strain occasioned by such shocks on any parts of the steering gear except the knuckles themselves and the axles. Deflection will occur, however, if obstacles are encountered which come in contact with the tire before or behind the center and exert a transverse effort.

The direct connected lever or tiller is a

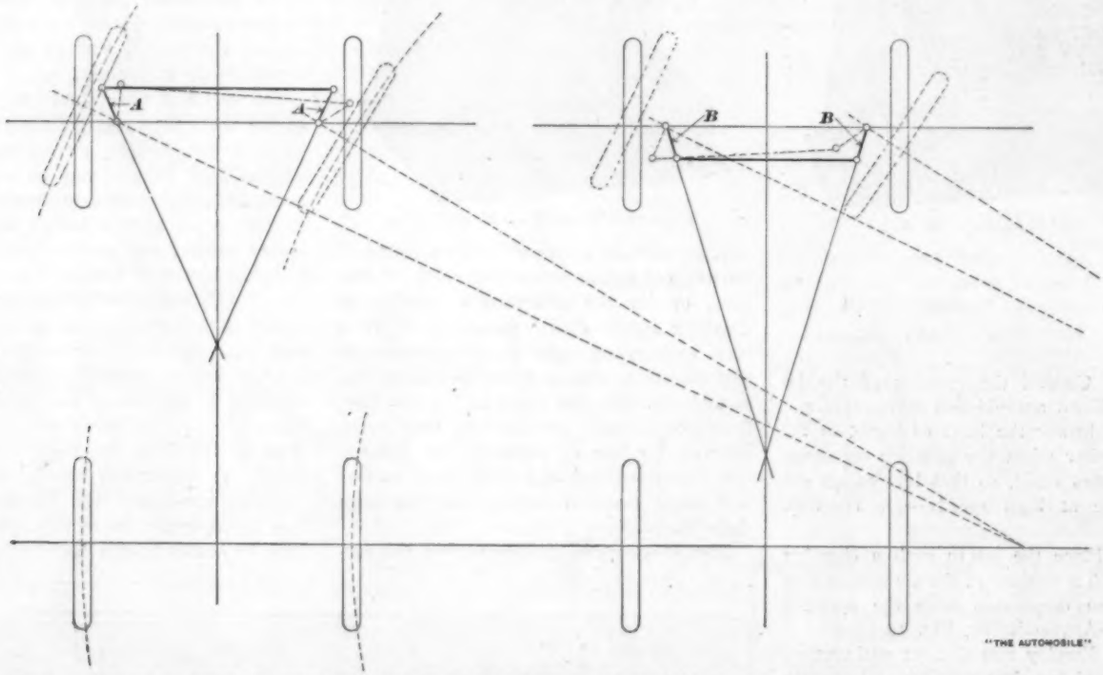


FIG. 1.—DIAGRAM SHOWING HOW AXES OF THE FRONT WHEELS OF A CAR INTERSECT EACH OTHER IN THE AXIS OF THE REAR WHEELS.

*Concluded from page 369, issue of March 11, 1905.

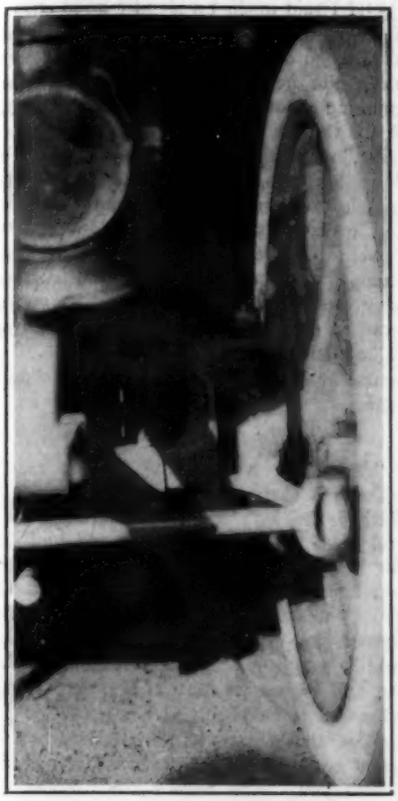


FIG. 2.—TYPE OF ELLIOTT KNUCKLE.

FIG. 3.—REVERSED ELLIOTT KNUCKLE.

satisfactory device for steering cars of light weight and moderate speed. It is, however, too quick or "sensitive" for touring cars and machines of considerable weight and speed. In addition, it is tiring on the arms when used on a touring car, unless a steering check of some kind is fitted. This may be either hydraulic or mechanical; its object is to prevent shocks from being transmitted from the road wheels to the arms of the driver, through the tiller or lever.

A device that is positive in its action and irreversible is necessary to absorb the shocks, and is found in the worm and worm segment, as in Fig. 6, and in the screw and nut, as in Fig. 7, in combination with the familiar hand wheel on an inclined column. One of the chief merits of this arrangement is that the wheel can be operated by either hand; and further, it is not a weight to be supported, as is a tiller, but affords a rest for the hands. For brief periods, the hands may be removed from the wheel, the car continuing on its course. The worm gear is usually perfectly irreversible; but the thread and nut gear only partly so, as the thread is necessarily so coarse and "quick" that a severe shock will be transmitted to the steering wheel. For this reason the worm and segment are used for heavy machines and racing cars, while the screw and nut arrangement is suitable for lighter pleasure vehicles. In either case, there should be provided means for taking up wear. If there is much lost motion, there will be a certain amount of unsteadiness in the steering, the wheels being out of control through the range allowed by the looseness; and in addition to this it is necessary to turn the hand wheel through a certain distance before it begins to turn the knuckles.

To relieve the irreversible steering gear of the more severe road shocks, a spring cushion is frequently incorporated into the connection between the gear and the nearest knuckle. This saves the tires as well as the gear from undue strains and wear from ruts and the like.

(*Concluded.*)

Dr. T. T. Smith recently purchased an automobile and his troubles have grown apace. The other day the "devil wagon" wouldn't run, and the dental surgeon took the machine apart and readjusted it, and still the thing wouldn't start. Other experts with reference to the construction of gasoline engines in general and automobiles in particular were called in consultation, and still the thing wouldn't move. As a final resort the gasoline tank was examined and found to be empty. There was no further trouble in making the thing go that day. This is not a copyrighted joke. It is a fact.—*Canton (Ill.) Register.*

No nut is safe unless it is pinned or locked in some way. The knowledge that not a nut on the car can come off is very comforting on a rough road.

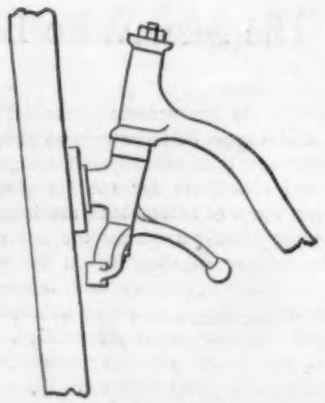


FIG. 4.—LEMOINE KNUCKLE WITH INCLINED PIVOT.

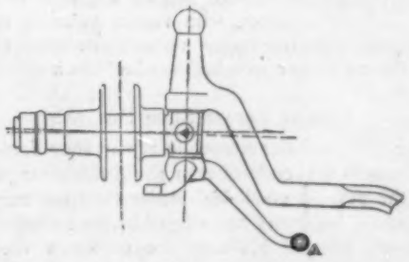


FIG. 5.—USUAL FORM OF LEMOINE KNUCKLE.

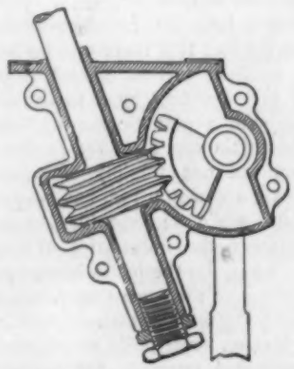


FIG. 6.—WORM AND SECTOR STEERING GEAR.

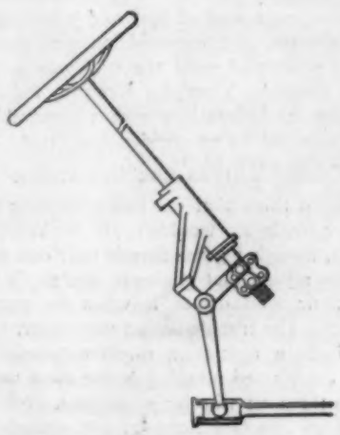


FIG. 7.—SCREW AND NUT STEERING GEAR.

The Man Who Blames It All On the Car.

By R. E. PEARS.

THERE are few persons connected with the automobile industry who have the opportunities that are enjoyed by garage men and chauffeurs for making observations on the way automobiles are handled; and while these personages are not given to the practice of standing on the street corners with megaphones and telling the public what they know about automobiles, still the man who wants information, dealt out in the rough, can very often get it from these familiars of the car. The chauffeurs are naturally well informed in the ways of the motor on the road, and the shop foreman is entirely familiar with the shop end of the business; these two worthies are constantly getting together and exchanging notes, with results valuable to both—and frequently uncomplimentary to the car owner who believes he "has it down pat."

Typical Repair Shop Foreman.

The typical automobile repair shop foreman is a very busy man about this time of the year—a good deal busier than the men under him; and knowing this, the technical man selected his time for paying a visit when the foreman might be expected to be sitting in his little office recovering from the effects of his luncheon and awaiting the 1 o'clock whistle.

A glance into the four-by-six sanctum revealed the fact that there was no foreman there; a little further search, however, showed him standing by a partly dismantled car with a gigantic sandwich in one hand and a tin cup of coffee in the other. He reminded one forcibly of a gasoline car making a non-stop run, having its tanks filled; for while he kept his hands busy putting away the necessaries of life, his eyes were busy on the job in hand, his brain was running on the same theme, and an occasional kick with practised foot would satisfy him on some point which could not be investigated manually for obvious reasons.

The technical man said "Hello!" and the foreman, after an effort to return the greeting through a wad of beef and bread, nodded silently, and conversation was necessarily postponed until the way was somewhat cleared. Then the foreman, indicating the car before him with a comprehensive wave of an unoccupied foot, said:

Owner Thinks Car Unreliable.

"You'd think that car had something the matter with it, wouldn't you? Well, it hasn't, though I guess there's only one man besides myself that knows it, and that's the chauffeur who drives it when he gets a chance. The trouble is that the owner, who has quite a reputation as an automobilist, says the blamed machine is the most unreliable thing on wheels; sometimes, says he, she'll go like Old Scratch; and sometimes she won't go fast enough to catch a Philadelphia funeral. Sometimes she'll take a hill on the high gear as if it was a downgrade, and an hour afterwards she'll crawl up the same slant with the motor laboring until she begins to pound and has to be put back into a lower gear.

"I never saw the owner to talk to him, and all I know about him is that he has owned half a dozen machines and could drive any of them if he wanted to. He has owned cars for so long that he is supposed to know all about them, and so when he sent word that the car was shy on power and wanted attention, I got busy right away and tried to make out what was wrong.

Car Seemed All Right.

"Darned if I could find anything out, except that she looked as if she'd been pretty hot not long ago. I had the motor running in the shop, and she seemed all right—couldn't locate anything in the shape of a bug. If the car had belonged to anyone else I'd have said he had wheels and that the old mill was all right; but the reputation of the owner made me wonder what it was that stumped me. I even took the car out on the street and gave her a few turns around the block, feelin' sure that this would show what was up; and then got her on a hill; but she worked like a clock.

"Back I goes and hunts up the chauffeur. 'Say,' says I, 'what's the trouble with that car of yours? 'Tain't haunted, is it? I don't know of anything else that ails it.' 'No,' says he, grinnin', "tain't haunted, but if you won't write a letter to the newspapers about it I'll tell you what's the matter. The boss can steer a car all right, and he can handle the levers and pedals. He's one of these big, wise-lookin' chaps that look as if they knew it all; you wouldn't think of offerin' to tell him anything he didn't ask—not the second time, anyhow.

He Knew What Would Happen.

"'He knows about what will happen when he shoves something, but if it doesn't happen the way he expects, he can't guess why, and he's stuck. Now the machine he used most last year he got onto pretty well by practice, me showin' him what to do all the time; but this one is a little different in the handlin' and he can't see why it should be, because the levers and pedals are fixed up just about the same as the old one.

"'Sometimes he'll make her behave like a lady, and take hills to the queen's taste; but he won't know why, and maybe next time he comes to the same hill he'll let her run easy till he gets on the grade and begins to go slow, and then open up and expect her to pick up on the high gear. If it's a steep hill, she won't do it; and pretty soon he'll spark her up till she pounds, and then he'll pull back into the next speed and cuss a few times about the machine.

"'If I said much I'd stand a good chance of losing a good job; so I suppose I'll just have to go on and get him into the way of using the new car without him knowin' anything about the whys and the wherefores of the thing.' And that was just the whole thing," said the foreman. "He liked to drive his cars, but he wouldn't take the trouble to learn anything about their working, except just enough to allow him to drive. If anything went wrong, he was stumped right away, and the chauffeur got busy and fixed things up; the owner wouldn't have anything to do with the machine until it was ready to run again. Of course he never went out without the chauffeur.

Didn't Want to Learn.

"About the worst thing in that man's makeup is that you can't tell him anything. Perhaps he says the car is losing power and must be overhauled; you tell him the car is all right, and he'll come back at you something like this: 'I don't know anything about the details, but I know that when I opened her up on Toboggan Hill she wouldn't pick up. That's proof enough for me, and I want the car put in order.' Now, what can you do with such a man?

"Yes, that's an extreme case—the worst one I ever heard of; but it's a fact, just as I told you. And there's any number of men who own cars who won't take the trouble to learn their lessons properly, and are forever blaming the machine when the fault is with the man."

A Good Roads Guide.

The very unsatisfactory condition of American roads in general, their constantly changing state as the weather varies and the continual improvements that are being made, altering the conditions almost daily, impose a very difficult task upon the compiler of a road guide for automobile tourists, and these facts are doubtless responsible for the scarcity of guide books that are of any practical value. Nevertheless a book, *Automobile, Good Roads and Tours*, has been brought out by the Hartford Rubber Works Co., of Hartford, Conn., which is remarkably complete and, judging from an examination of the contents, likely to be of the greatest assistance to tourists who contemplate making trips through the Eastern and Middle states, the territory covered by the work. It is manifestly impossible to describe every road, or even every good road in this territory, in a book of convenient size; so the work is confined to a series of good, clear directions for traveling over the best routes between the points which are most likely to be visited, and when the tourist arrives at his town he can look up in the book the best hotels, garages and repair shops, and so avoid much annoyance and waste of time. In addition to such information as the foregoing, the automobile tourists is given hints and tips of great value, many of the suggestions being of an unexpected character. Any special precautions required in given localities are mentioned, and the tourist thus informed will avoid much of the trouble that would be his if he depended upon information picked up on the way—a most unsatisfactory method, as a rule.

Twin City Attractions for July Tourists.

Special Correspondence.

ST. PAUL, June 3.—St. Paul, the geographical center of the North American continent, is to have the honor of entertaining what will almost certainly be the largest assembly of touring motorists ever gathered together in America. The tour, which will have four main branches—respectively from Chicago, Omaha, Grand Forks, N. D., and Duluth—will end in the Saintly City on the afternoon of July 4, and from present indications seems assured of an attendance of 1,500 cars.

Chicago and the territory east, north and south of the big town by the lake, will contribute to the extent of at least 600 cars, and with the delegations from along the Chicago-St. Paul route, there should be a total of 800 cars for that section.

The southwest division, tapping Missouri, Kansas, Nebraska, South Dakota and even Colorado (from which state seven entries have already been made), should have 350. The Grand Forks and Duluth sections promise 200 or more cars each, some of them coming from as far west as Helena, Mont., and as far north as Winnipeg, Canada.

It is hoped that several New York cars will be present during the carnival, as the committee in charge of the tour has arranged several numbers on the program with especial reference to eastern visitors.

Nothing approximating this tour in size and territory has ever been undertaken. The St. Louis tour last year had less than half as many participants as the number of licenses already issued to prospective tourists for this affair.

The main section of the 1905 St. Paul Automobile Carnival Tour traverses a land of peaceful beauty. The route leads across the northern tier of Illinois counties. The country there is gently rolling, timbered to a considerable extent and dotted with little lakes. It is primarily a dairying country and one of the richest rural districts in America. In the northwestern corner of the state will be encountered the nearest approach to hills in Illinois.

The lordly Mississippi will be crossed at Dubuque. To those who have never seen the majesty of the Father of Waters, there is a new sensation in store. The sweep and power and size of the great stream is unapproachable in grandeur as it flows silently and irresistibly southward.

Through the vast farming country of Iowa the route makes a gentle curve to the north and enters Minnesota about midway of the southern boundary of that state. Thence the route to be followed passes through Austin and Faribault and on to St. Paul. The way through Southern Minnesota is laid out in the "oats belt," and the tourist in certain places may look across fields of oats as far as his vision will reach. The country is more broken about Faribault and gradually increases in its hilly tendency until near St. Paul.

While the capital of Minnesota is seated on seven hills, like Rome and San Francisco, the country surrounding the city is level.

To the average New Yorker the name St. Paul means a great granger railroad stock, the gyrations of which are particularly hard to guess, and also the name of a mystic place where Jim Hill used to live. In reality the city is a place of about 200,000 inhabitants. It is situated on the palisades of the Misissippi at the actual head of navigation. It is the railway center and gateway of the Northwest, and in spite of the encyclopedia, St. Paul is the capital of Minnesota.

The new state capitol, considered by many architects to be the peer of any public building in the country, is located on a commanding eminence near the business center. The capitol is built of white marble surmounted by a lordly dome, which measures 220 feet to the top of the golden globe that ornaments its crest. The capitol is by all odds the artificial triumph of the Northwest.

Summit avenue is the most beautiful boulevard in the Mississippi valley; but Lake Como, named after the famed Emerald of the Alps, is the foremost decorative feature that Dame Nature has added to St. Paul's atractiveness. The lake is right at the doors of the city. It lies entirely within the city limits, and is a favorite resort for short auto runs. Como lake is beautiful either by day or night. Around the lake runs a three-mile boulevard, which is generally used by autoists who are looking for a peaceful and comfortable view of the prettiest spot in Ramsey county.

To the north of the city about twelve miles, is White Bear lake, one of the most picturesque sheets of water in the vicinity. Wildwood, a pleasure resort, and White Bear village are located on the lake about nine miles apart by road. The fishing in neither Como nor White Bear is as good as it is at some of the lakes farther away from the city, but occasionally a five-pound bass or a ten-pound pickerel furnishes a lively half hour for a fortunate angler. The run to White Bear lake is a beautiful one, and is on the program that the entertainment committee has arranged.

As many of the tourists as wish may attend a fishing party that will be given during the stay in St. Paul. Forest lake has been selected for this affair, and the reputation of the lake insures at least one bass for each visitor who makes the thirty-mile run.

Within short touring distance of the city lie the "10,000 lakes of Minnesota," and the "5,000 lakes of Wisconsin." Ramsey county, in which St. Paul is situated, contains twenty-five beautiful sheets of sparkling water and in each of them fish of a dozen kinds may be had for the catching.

Bustling Minneapolis lies up the river a few miles, and is connected with St. Paul by good boulevards and rapid transit lines. The towns are practically one, as the growth of each has been toward the other and the boundary between the cities is a well built up street, one side of which is in St. Paul and the other in the Mill City. The motorists of Minneapolis have raised a fund for the entertainment of the tourists during the time allotted by the St. Paul Automobile Club for visiting across the river. Both cities are preparing to welcome the tourists, and automobilists from each declare that the rivalry between the towns will, in this instance at least, be turned to good account.

Minneapolis presents many points of interest. Lake Minnetonka, one of the noted pleasure resorts of Minnesota, is a short and beautiful run from the Mill City, while lakes Calhoun, Harriet and the Lake of the Isles, are within the city limits. The falls of St. Anthony, while robbed of their spectacular features by the hand of commercial expedience, furnish the power to the flour mills that have made Minneapolis pre-eminent in the manufacture of cereal foodstuffs.

The government post, Fort Snelling, is situated at the juncture of the Minnesota and Mississippi rivers, and is the largest fort in the Northwest. The roads to the fort are particularly fine.

The State Fair Grounds, where the Minnesota agriculturalists meet once a year and hold one of the largest and most important state fairs in the country, has been secured for the automobile race meet. The track is a fast regulation mile oval, and will be especially prepared for those races. The cream of the professional drivers are expected to attend the meet and compete for the purses that will be hung up.

Only two cities in America exceed St. Paul in proportionate wealth—New York and San Francisco, and Fifth avenue and Riverside Drive, in the metropolis, and California street, in the Golden Gate city, have the strongest kind of a rival in Summit avenue, St. Paul. The mansions on this thoroughfare have given it a wide reputation as a beautiful driveway. So interested have the wealthy residents on Summit avenue become in the July tour, that they have offered to throw open their homes for the entertainment of the ladies who accompany the tour, during the time the men are engaged with the big banquet and dinner functions that have been arranged.

Governor Myron T. Herrick, of Ohio, has bought a 40-horsepower Columbia side-entrance car. The governor is an enthusiast, and during the summer months he makes frequent trips between the capital city and his home in Cleveland. On a number of occasions he has covered the 170 miles between cities in a day.

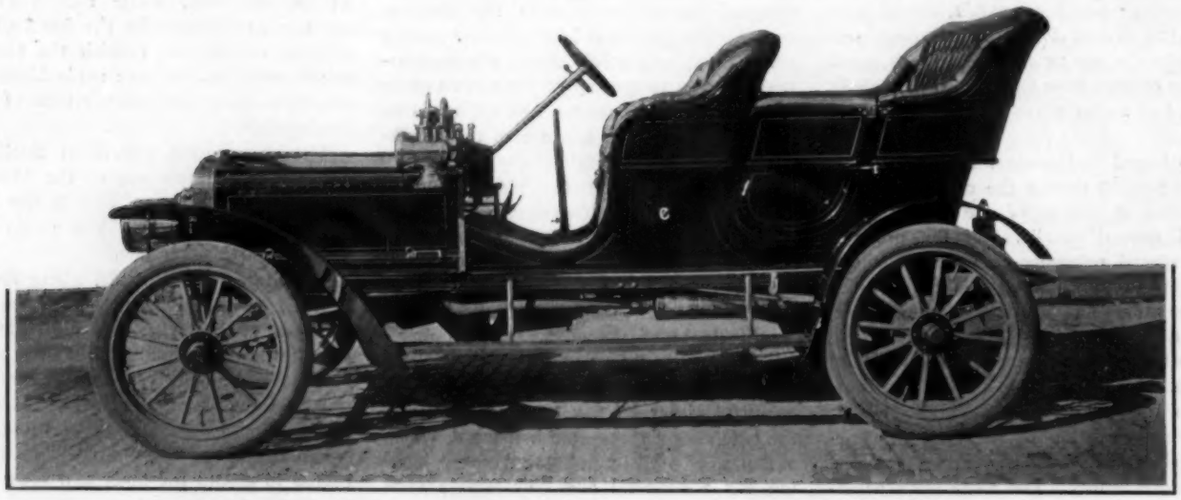
St. Louis Four-Cylinder Touring Car.

THE touring automobile in its present form and with its present ease of control has been made possible by the gradual improvement of every component part, and each refinement in design or construction has had its effect in evolving an efficient whole. There are few features, however, in which the improvement has been more marked than in the flexibility of the motor. The first gasoline motors were very poor affairs in this respect, having an extremely small range of speed; in fact, they were practically single-speed motors, and it is only within the last few years that the throttle has been of much use on the automobile. As the motor efficiency has been increased, there has been a corresponding gain in flexibility, and there are to-day many automobiles whose motors will run well under load at very slow as well as at high speeds.

As the flexibility of the motor increases the necessity for using the change speed gears decreases, resulting in less trouble for the driver, less noise and discomfort for all occupants of the car, and usually greater efficiency for the machine. The days when it was necessary to resort to a low gear whenever a slight grade was encountered have passed, and now every car worthy of the name will do the greater part of its running, when the roads are not excessively hilly, without resorting to low gears.

The St. Louis touring car, built by the St. Louis Motor Carriage Co., of 1211 North Vandeventer avenue, St. Louis, Mo., is built with a view to obtaining great motor flexibility. The engine is rated at 30-34 horsepower; the car as a whole follows the accepted lines for touring cars, being large and roomy with side entrance body of attractive design. It is stated by the manufacturers of this car that on an ordinary day's run, over roads of all kinds, the high gear can be used continuously, even steep hills being surmountable on the direct drive.

The St. Louis touring car has a frame of angle steel, with cross members of the same material; forged steel spring hangers are riveted at each end in the usual way. The frame is narrower at the front than at the rear, but the decrease in width commences a short distance in front of the rear axle, instead of at a point near the motor, and the frame very gradually becomes narrower up to a point opposite the clutch, where it again is parallel. In this way sharp bends are avoided. The steel angles are filled with wood, which adds stiffness and at the same time improves the appearance of the frame. Semi-elliptic springs are fitted all round, the rear springs being forty-two inches long and the front ones thirty-six inches long, all hung directly under the frames with no offsets.



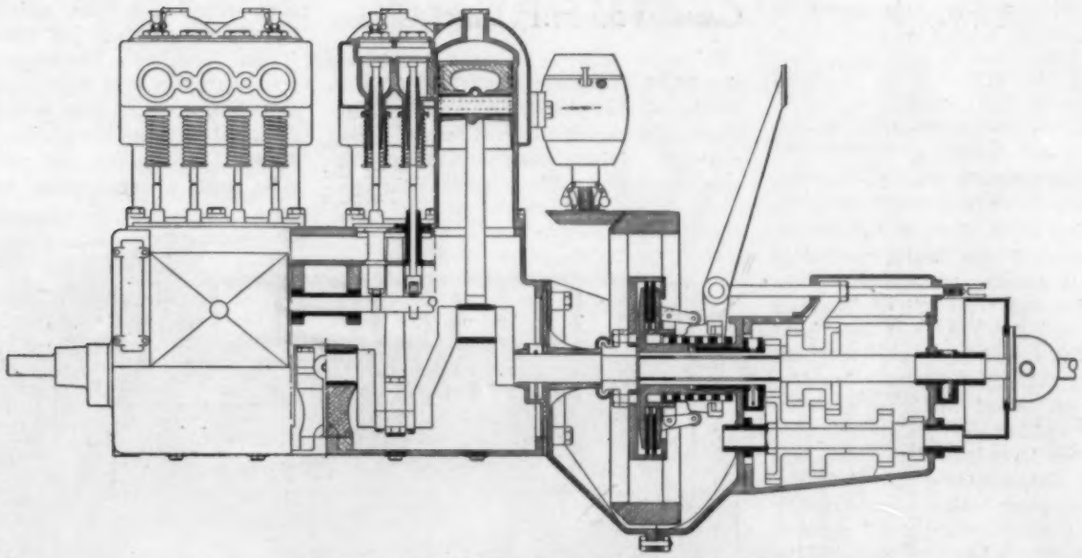
ST. LOUIS 30-34 HORSEPOWER FOUR-CYLINDER VERTICAL ENGINE TOURING CAR

No sub-frame is required for the motor, owing to the peculiar construction of the casings. The front end of the motor rests on a steel cross-piece, while at the rear end the crankcase end is extended latterally in the form of two stout wings reaching to the main frames, to which they are bolted. Two similar wings extend from the transmission gear case and join the wings from the crankcase, the flywheel revolving between the two sets of wings. A heavy steel pan extends from the front end of the motor to the rear of the flywheel, keeping out mud and dust from underneath and also materially strengthening the whole system. The transmission gear, which is centrally located behind the motor, is very small and light, and is supported wholly by the arms. Drive is by propeller shaft and bevel gears to the live rear axle.

The four-cylinder vertical motor, placed in the usual forward position, has its cylinders of 4 1-4 inch bore and 5 3-4 inch stroke, cast in pairs with integral heads and water jackets, the latter extending down to the point reached by the piston at the lower end of its stroke. Valves are all duplicates and are all located on the same side of the motor—the left—and all mechanically operated from a single camshaft driven by gears housed within the crankcase. The cams act directly on rollers at the lower ends of the push-rods; the guides are very long, of bronze, and the rods are of steel, hardened, ground and tempered. The rear end of the camshaft is geared to a vertical shaft, on the top of which is the timer.

A carbureter of the Longuemare type is used, and is practically automatic. Exhaust and inlet pipes are each in a single casting; two yokes, one on each pair of cylinders, hold both pipes in position. Spark plugs are screwed into the bronze plugs that close the holes over the inlet valves. Connecting rods are of the marine type, very long, and are made from steel forgings.

The crankshaft has three bearings, one at each end and one in the centre, between the pairs of cylinders, and is lubricated by splash, the oil being caught in pockets over the two end bearings and led to wells below the bearings. Loose rings on the shaft carry the oil up from these wells, so that if by any chance the oil in the crankcase is lost the main bearings would still run for some time before getting dry. A small pump, actuated by an eccentric on the forward end of the camshaft, forces oil into the forward end of the crankcase, taking oil from a tank located close to the cylinder heads on the right-hand side of the motor. Oil pockets are also formed in the bearings of the camshaft, which are inside the crankcase. The water pump is also located inside the crankcase, being at the forward end on the right-hand side; it is of the gear type, and is gear-driven from the crankshaft, pumping the cooling water through a radiator made of vertical-gilled tubing. No fan is required, the spokes of the flywheel being blade-shaped. Ignition current



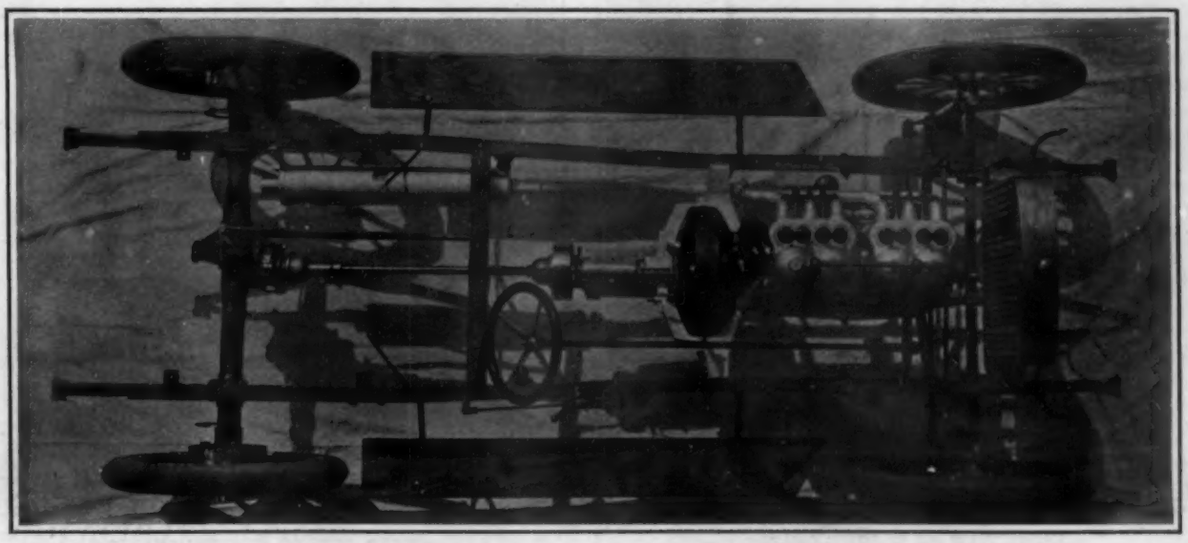
DRAWING OF ST. LOUIS ENGINE AND TRANSMISSION.
Showing in Vertical Section Valves of Third Cylinder, Piston of Fourth Cylinder, Crankcase, Disc Clutch and Change-Speed Gears.

is supplied by dry batteries for starting, and by a dynamo when running. A novel method of mounting the generator is adopted, as the line engraving shows. A bracket on the motor supports the generator with its shaft vertical, the bevel pulley being driven from the motor flywheel, which is turned to a bevel corresponding with that of the friction pulley. Power is transmitted from the motor to the first transmission shaft through a disc clutch, composed of alternate discs of steel and bronze forced together by a spring acting through three short fingers; the arrangement is clearly shown in the outline engraving. When the clutch is in engagement the spring thrust is entirely self-contained. The usual pedal is provided for withdrawing the clutch, and this interlocks with the gear-shifting mechanism so that gears cannot be shifted until the clutch is withdrawn; and the clutch cannot be re-engaged until the gears are properly meshed. This is accomplished by the use of a finger having a hooked end which drops into notches cut in the rectangular bar to which the shifting-fork is attached. When the clutch is released the finger, which is formed integral with the clutch operating shaft, is raised out of whatever notch it may be in, leaving the bar free to slide when the gear-shifting lever is moved. If the gears are now changed but improperly meshed, the clutch cannot be let in because the corresponding notch in the bar will not be in the position to receive the hook, and the clutch is thus held out until the gear is properly placed, when the hook falls into its notch and the clutch takes hold. This arrangement is not visible in the outline engraving, but can be noted by looking closely at the photograph on this page, giving a plan view of the chassis.

Sliding gears provide for three forward speeds and reverse, the drive being direct on the high gear. The gearcase is deep and narrow, the secondary shaft being below and in the same vertical plane with the primary shaft. The same method of lubrication is adopted as in the engine crankcase—the main bearings are provided with oil pockets and oiling rings, and a lead from the oil pump carrying oil into the case.

At the rear of the gearcase, on the outer end of the primary shaft, is the brake used for regular service, consisting of a steel drum in which are two blocks pressed outward by a toggle operated by a pedal. Immediately behind the brake drum is a universal joint; and at the rear end of the propeller shaft is the second joint. The short shaft carrying the bevel driving pinion is mounted on two Timken roller bearings, one bearing being located on each side of the pinion; these bearings are used throughout the rear axle.

Brown-Lipe differential gearing is fitted—in fact, all gears throughout the car are of Brown-Lipe manufacture. The live



CHASSIS OF ST LOUIS TOURING CAR SHOWING VERTICAL ENGINE AND SHAFT DRIVE.

shafts project beyond the axle sleeves far enough to take the hubs of the road wheels, which are keyed on with very heavy steel keys. Expanding brakes on the rear hubs are operated by pedal, forming the emergency brakes. The brake drums are formed integral wtih the wheel hubs.

Heavy steel tubing is used for the rear axle sleeves, which are brazed into the bronze casing which encloses the differential and bevel driving gears; the whole rear axle is greatly strengthened by the addition of a steel truss rod which passes under the casing. The front axle is of square section forged steel, enlarged at the ends where the Elliott steering knuckles are welded on. Road wheels are 32 inches in diameter and are shod with 4-inch tires.

But one side lever is used, that being for shifting the change speed gears. Both regular and emergency brakes are operated by pedal, and a small central pedal connects with the throttle; a lever for changing the time of ignition is placed on the steering wheel column, but no throttle lever, the pedal alone being used to work the throttle.

The wheelbase of the car is 106 inches and the tread standard, and the machine weighs 2,200 pounds. Running boards at each side are joined to the large mud guards; the running boards are covered with rubber to give a good foothold. The car is finished in dark blue with light blue striping and cream running gear; the general appearance of the machine, with its graceful body and long, low hood, is exceedingly good.

The "paying guest" arrangement, a polite English way of indicating a boarder or lodger, has spread to motoring now, for in an advertisement in an English trade paper a young woman desires inclusion "in a motoring party as paying guest."

Casaday 35-H.P. Truck Chassis

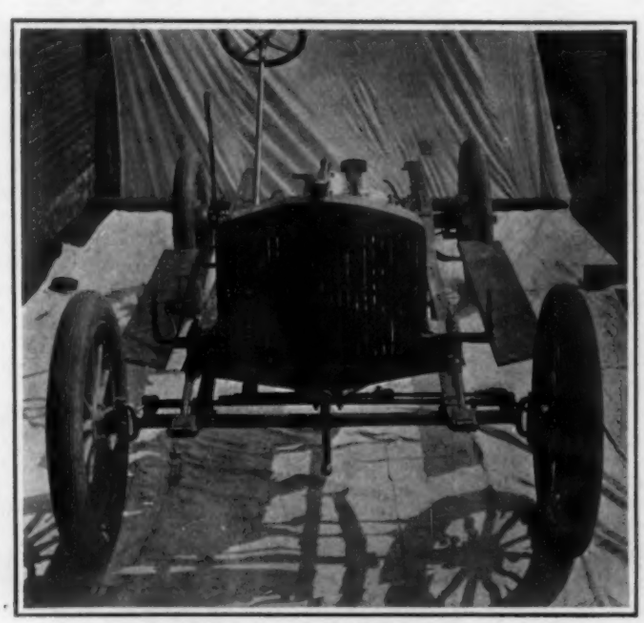
After an extensive series of experiments the W. L. Casaday Mfg. Co., of South Bend, Ind., has placed in the market a 35-horsepower chassis designed to take almost any style of body designed especially for commercial work. The purpose of the company is to provide a more powerful and faster truck than most of those heretofore offered.

CASADAY 35-HORSEPOWER CHASSIS FITTED WITH POLICE PATROL BODY.

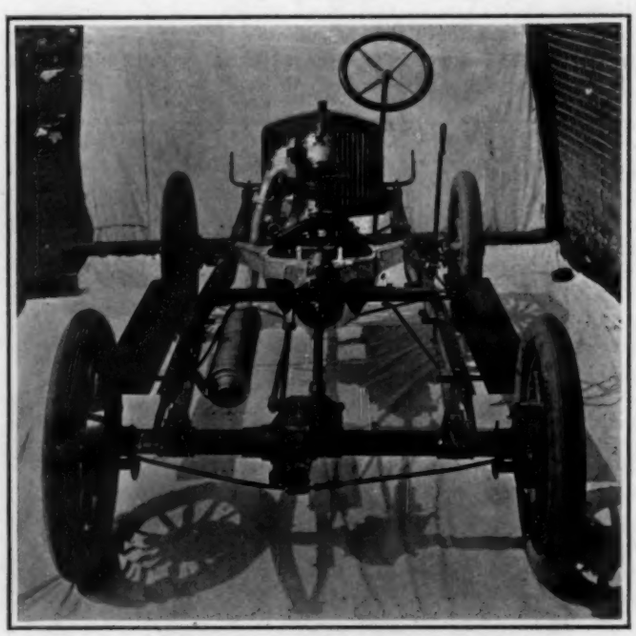
In the accompanying engraving is shown the new chassis fitted with a police patrol body; it will take with equal readiness an 18-passenger break body, a 16-passenger depot wagon, a full line of express and truck bodies and such special bodies as fire and insurance patrols, standard chemical engine and fully equipped hose cart. All these bodies are interchangeable on the chassis.

The police patrol weighs complete 4,500 pounds. The equipment consists of a 9-inch mirror reflector searchlight, with generator; two standard side oil lights, a 9-inch horn with foot bellows, 14-inch gong and large exhaust whistle. A full set of tools is also furnished. The truck will accommodate twenty-four men, sixteen in the main body, two on front seat, two on rear step and two on either side of the side steps. Large lockers are carried on the sides, and accommodation for stretcher, medicine chest, coats and blankets is provided in the main body. The fire wagons have a like equipment plus ladders, axes, chemical extinguishers, nozzles, etc.

The standard chassis has the following dimensions: Wheelbase, 108 inches; tread, 60 inches; length over all, 154 inches; height of top of steering wheel, 7 feet; wheels, heavy artillery type, equipped with 36 by 3 1-2-inch side wire solid rubber tires. The frame is made of heavy channel steel and is supported in front by two full elliptic springs and a heavy platform spring in the rear. Double side chain drive is used, and powerful double-acting brakes act on drums bolted to the rear hubs. The transmission gears are made especially large



FRONT VIEW OF ST LOUIS CHASSIS.



REAR VIEW OF ST LOUIS CHASSIS.

and heavy, and furnish three speeds ahead and reverse. The transmission is ball-bearing throughout.

The engine is four-cylinder 35 B. H. P., water-cooled. Cylinders are cast in pairs and all valves are mechanically operated. By means of an auxiliary camshaft the operator, by manipulating a small lever, can hold the exhaust valves open three-fourths of the length of the compression stroke, relieving the compression so that the engine may be cranked with very little exertion. A large positive pump, geared direct to the crankshaft, forces the water through a large spiral radiator which is carried in front. The engine has a speed variance, by use of the auxiliary camshaft, of from 150 to 1,500 revolutions. The engine bearings are made of special metal. Oil is furnished by a six-feed positive oiler directly connected to engine. The car has a speed range of from five to twenty-five miles an hour. Second speed ahead (ten to fifteen miles) is used for regular work, but third speed, or direct, is especially desirable in connection with the truck as a police or insurance patrol, ambulance or chemical or hose wagon. The engine is placed directly under the seat and every part is easily accessible, there being removable screens on both sides.

The president of the company, W. L. Casady, is also president of the South Bend Chilled Plow Company, and is widely known as a mechanical engineer and inventor. Interested with him are other mechanical engineers and practical business men.

The prison patrol is among the latest and most novel uses suggested for an automobile. The Massachusetts authorities contemplate the erection of a State Prison on Nashawena Island in Buzzards' Bay, which has an area of about three square miles. Chairman Pettigrove, of the legislative committee, advocated the building of the prison without walls, and the purchase of automobiles for the use of the patrols whose duty it would be to prevent the escape of prisoners.

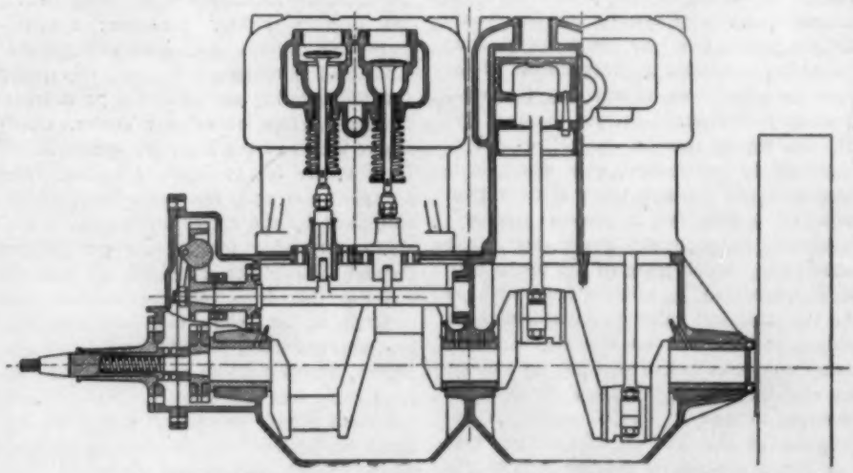
Will Build French Cars.

The American Locomotive Company has decided to enter the automobile manufacturing field, and has arranged to build Berliet cars under the patents owned by the parent Berliet company in Lyons, France. A special plant for the construction of automobiles exclusively will be established in Providence, R. I., adjoining the Rhode Island Locomotive Works, one of the constituent companies of the locomotive combination, which has immense plants also in Dunkirk and Schnectady, N. Y., and elsewhere.

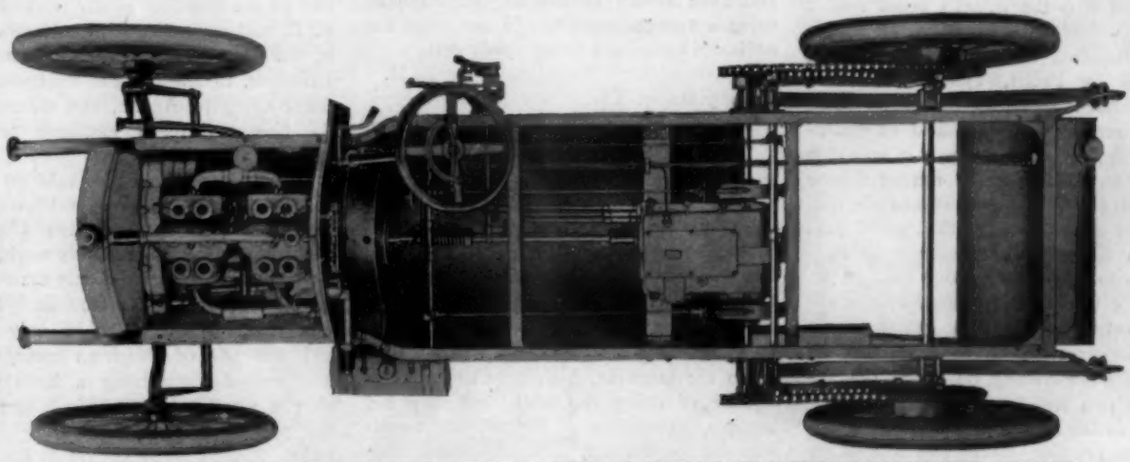
American workmen will build the cars from American materials, but the complete plans and specifications used in the Berliet company's French shops will be followed, and the American company will be kept informed as to any changes and improvements made in the French cars. The American Locomotive Company has secured the sole patent rights to build Berliet cars in the United States and Canada. This particular car was selected because of its simple and substantial construction and its apparent suitability to American roads.

Built on Mercedes lines, the car is low hung and yet has sufficient clearance for safe driving on rough roads. The motor has its cylinders cast in pairs with integral heads and water jackets; valves are all mechanically operated. Low-tension make-and-break ignition is fitted, current being supplied by a Simms-Bosch low-tension magneto driven at the same speed as the crankshaft of the motor; it is driven by gears which, together with the camshaft gearing, are completely enclosed in an aluminum casing. The motor flywheel is of large diameter, but light weight, and its spokes are blade-shaped, taking the place of a fan. Metal to metal clutch surfaces are used. A transmission gear of the selective type, resembling that used in the Mercedes cars, gives four forward speeds and reverse with a single lever. Ball-bearings of the D. W. F. type are fitted throughout the car, with the exception of the motor.

Two hundred cars will be built in the first lot, and will be ready for the market early in 1906; these will be 22-horsepower and 40-horsepower touring cars. Heavy trucks will be built in the near future, though it is not yet decided just when this branch of the business will be taken up.



BERLIET ENGINE, PARTLY IN LONGITUDINAL VERTICAL SECTION.



CHASSIS OF FRENCH BERLIET TOURING CAR TO BE BUILT IN AMERICA BY AMERICAN LOCOMOTIVE COMPANY.

Letter Box

Air Cooling and Radiator Efficiency.

Editor THE AUTOMOBILE:

[211].—In reply to an editorial note on a suggestion made by the writer in an article on air cooling which appeared in THE AUTOMOBILE of April 29, to use the back of the piston as a pump to force cooling air around the cylinder, I would like to say this: That while, as was pointed out, the limited quantity of cooling air that could be pumped in this way could not abstract enough heat to hold the temperature of the cylinder walls down to anything like what a water-jacket would do, yet the fact that the cooling current is controlled and is made to do its work exactly where it is needed, might make it more efficient than most air cooling, as at present practised. Moreover, as is pointed out in the article referred to, the pumping of the piston may be supplemented by other means, such as the aspirator and valve mentioned, without adding to the load on the engine. The writer confesses to knowing but little about the efficiency of an aspirator, but it is interesting to note, in this connection, a description of the Viavant air cooling system, which appears on another page of the same number of THE AUTOMOBILE. In this system an aspirator is depended upon as the sole means of obtaining an air current.

The real temperature of the working or inner walls of an air cooled cylinder is, of course, quite variable. It is safe to assume that it is generally pretty high, even though the outer edges of the cooling fins are fairly cool. So long, however, as it does not interfere with proper compression or lubrication, this high-working temperature may be an advantage, and is claimed as such by makers of air-cooled motors, in that this extra heat is not carried off and may be converted into useful work.

Even with water cooling the actual amount of heat given off through the cylinder walls to the cooler is not definitely known, and it is the writer's belief that it is almost universally overestimated. Considered according to the laws of heat as laid down by Peclét, Tyndal and other such venerated authorities, together with the experimental data of a host of steam-heating men, to whose interest it was that the air should abstract the utmost degree of heat, it certainly seems impossible that the limited amount of air that could pass through a cooler could do the work it is credited with. The assumption that 40 per cent. of the total heat liberated by the explosive mixture is lost to the cylinder walls is quite conservative. I have at hand an article on water-cooling, in which the author, who is a well-known mechanical engineer, a writer and an authority on gasoline engine practice, places this loss at 52 per cent., which is not uncommonly high. To illustrate the point in question, in the absence of more satisfactory data, the writer quotes from the article just referred to the following figures, obtained by the above-mentioned authority by personal tests. The cooler was of cellular construction, and though rather light for the motor used in road work, it lost no water and it was not believed to have been worked to its utmost limit.

The figures given were: Motor, 74-horsepower, giving, on a basis of 52 per cent., 10,180 heat units lost through the cooler per minute. Maximum water temperature, 200 degrees Fahr.; minimum, approximately 80 degrees, giving an average difference of temperature between the cooler and the entering air of about 70 degrees. Cooling surface of cellular cooler, 18,480 square inches; front area, 600 square inches (4.16 square feet); depth, 4 inches. The air speed was 1,780 feet per minute, which, multiplied by the cooler front area, would give 7,321 cubic feet of air per minute through the cooler provided all the air striking the front of the cooler goes through it; and since one heat unit will heat approximately 60 cubic feet of air one degree, 10,180 heat units would heat this 7,321 cubic feet 82.6 degrees. Now, does it not seem utterly unreasonable that the air could be heated over 80 degrees in one-ninetieth part of a second, the time occupied in its passage through a 4-inch cooler, when the initial difference of temperature between the air and the cooler is only 70 degrees? F. REAUGH.

Oak Cliff, Tex.

Wants to Use Magneto.

Editor THE AUTOMOBILE:

[212].—I have a single-cylinder marine engine and have bought a magneto to furnish current for the make and break ignition, so as to save batteries. So far, however, I have been unable to make the magneto do the work. The directions tell me to bring one wire to the rocker arm; but that I cannot do, because there is not room enough. Please give me a sketch showing what to do. I want to start on batteries and then switch over onto the magneto, using a two-point switch. I am using the ordinary make and break spark coil.

E. H.

Toledo, O.

Taking it for granted that your ignition was satisfactory before you tried the magneto, it is safe to assume that the ignition would be satisfactory with the magneto if connected up to the same points, provided the magneto and coil are adapted to each other, and that the magneto runs fast enough to generate the required current. It is important that the coil should be suited to the magneto; both may be perfectly capable of doing the work, but may fail because the winding of the coil is not suitable for the current furnished by the generator. If you will give details, such as make of engine, magneto and coil and sizes of each, probably we could help you out if these general hints are not sufficient.

Jump Spark as an Auxiliary.

Editor THE AUTOMOBILE:

[213].—Kindly inform me if the jump spark system of ignition could be used on the 1905 Locomobile motors as an auxiliary to the make and break system, and if so, how can this be done? C. E. S. W.

Bridgeport, Conn.

Jump spark ignition can be applied to the motors you speak of, and, in fact, this is being done by the Locomobile Company's New York agency for customers who desire to have an alternative system for use in case of emergency. It would be necessary, of course, to provide batteries, spark coils, spark plugs and a timer. New cover plates would have to be made for the openings in the tops of the cylinders; and into these new plates the spark plugs would be screwed. The original yokes can be used for securing the new plates. The best location for the timer is on the left side of the dash, where it can be seen by the driver. To rotate the timer a sprocket is attached to the end of the pump shaft, taking the place of the nut originally placed there. A sprocket on the timer shaft and a chain complete the installment.

Auto as Salesman's Aid.

Editor THE AUTOMOBILE:

[214].—Last summer, while in Menominee, Mich., I bought a model A Cadillac and ran it out into my territory, which is the land of the Dakotas. All through the fall I ran the car with success. If you take a map you will be able to see what ground I covered. Starting from here (Casselton, North Dakota) I went northwest, following the Soo R. R. for the most part, as far as Portal, on the international boundary between the United States and Canada.

From Portal I came back to Kenmare and then went east, making the main line and all the branches of the Great Northern R. R. and a number of inland stores—that is, off the railway. I went south from Larimore, to Hatton, and then west across the country to Anetta, and then followed the Great Northern southeast to Casselton.

I made 125 towns and sold 98 bills of shoes—all new trade—in thirty-two days. No other transportation that I know of could have accomplished this work, and, so far as I know, I am the only man out selling shoes with an automobile. The trip was very satisfactory. The only break I had was one of the front springs, which was caused by running a little too fast over a small bridge. This, along with a few punctures, is all the trouble I experienced. T. HALLOCK.

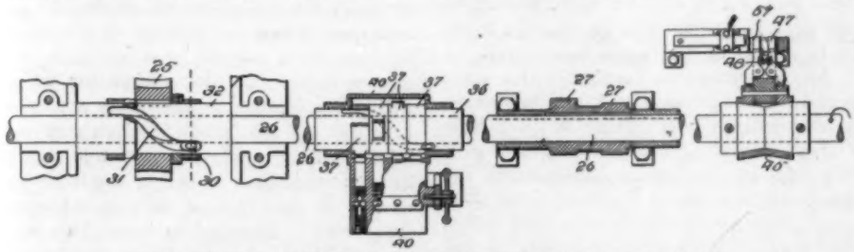
Casselton, N. Dak.

Patents

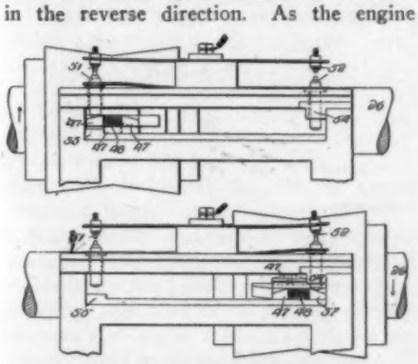
Reversing Device for Gas Engine.

No. 790,856.—T. L. Sturtevant, of Quincy, and T. J. Sturtevant, of Wellesley, Mass.

This device performs two functions: First, by shifting the camshaft lengthwise in a sleeve connected to the 2 to 1 gear, to rotate the shaft relatively to the gear by means of a spiral slot and roller pin, thus bringing the exhaust cams into the proper positions for reverse motion (the inlet valves being automatic); second, by means of a suitable switch mechanism connected to this same shaft, to open the ignition circuit to stop the engine, and then to close it and produce a spark automatically the instant the crankshaft, having been brought to rest on its compression stroke, rebounds in the reverse direction. As the engine always stops and rebounds on the compression stroke, this device produces an easy reversal instead of a violent one.



STURTEVANT GAS ENGINE REVERSING DEVICE PARTLY IN SECTION.



DETAILS OF AUTOMATIC SWITCH.

In the drawing, *25* is the 2 to 1 worm gear, and *26* the camshaft, connected by the pin and spiral slot *30* *31* to the sleeve *32*. By moving the shaft axially the exhaust cams *27* are rotated on their feather with the shaft. A further rotation, as required, is imparted to the spark cams *37* by the pin and slot shown dotted; and change in the spark time without reversal is effected by shifting the box *40* lengthwise of the shaft, causing the cams to rotate on the shaft.

The automatic switch device is shown in sectional plan at the right-hand end, and in elevation in the separate details. A friction ring *45* carries two fingers *47*, normally pressed apart by the spring *48*, and one or the other acts as a wedge to close the circuit at *51* or *52* for forward or reverse motion.

Supposing that the left-hand position shown in the upper detail represents the ahead motion, the shaft is shifted to the right for reversal, carrying *45* and *47* with it, till one of the fingers abuts against *54*, and *48* is compressed. As soon as the rebound occurs the shaft turns down (see the arrow), carrying the fingers with it by the friction of *45* till they strike the lower guide, when one, as at *57*, is pushed into action by spring *48*. For resuming forward motion the other finger and the shoulder *55* are utilized.

Change-Speed Gearing.

No. 790,425.—J. E. and J. C. Caps, of Kansas City, Mo.

An individual clutch mechanism with a special arrangement of split expansible key, sliding inside the shaft, and brought into action against one or another male clutch member, whereby the latter, which is split, may be expanded into engagement with the female clutch member, to which the gear is attached.

Change-Speed Gearing.

No. 790,421.—E. H. Belden, of Chicago.

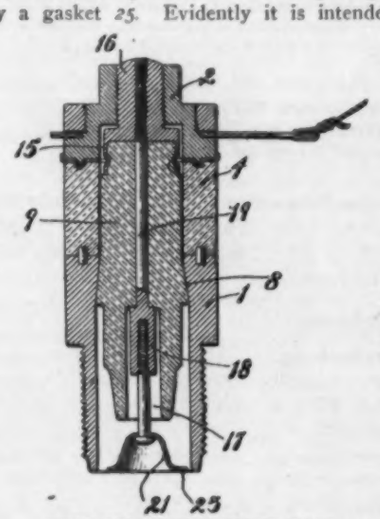
A system of transmitting power from the clutch shaft *5* to the cross countershaft *3* by means of a crown wheel *8*, having concentric circles of roller pins *9* *9* instead of teeth, and a toothed wheel *10*, slidable on the differential sleeve *13* by a key, so as to mesh with one or another circle of roller pins according to the speed desired. By a suitable connection of links and levers with the clutch-releasing pedal, pressure on the latter is made to withdraw *8* from engagement with *10*, as shown in the larger view, before *10* is shifted for a change of speed.

Some virtue is claimed for the form of pins and teeth shown.

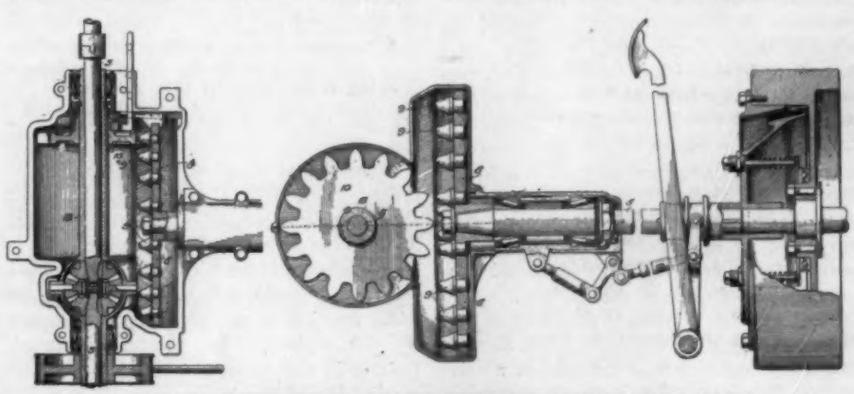
Spark Plug.

No. 790,571.—G. L. Herz, of New York.

A spark plug having a number of special features, one of which is a practically soot-proof design, and another is the complete enclosing of the principal porcelain insulation, thus protecting it from all ordinary risk of injury. In the drawing, *1* is the usual threaded steel shell, *9* the porcelain and *4* an exterior protecting porcelain, slipped over *9* and prevented from turning on *1* by the two small pins shown. At one point *8* of its length, the porcelain *9* is of conical form, and a tight fit in a similarly tapered portion of the shell. The stem *19* has an elongated square head *18*, smaller than the square recess *17* in the porcelain, and it is held permanently in *9* by the nut *16*, whose flange *15* is spun into a groove in the porcelain. Another nut *2*, threaded on *16*, holds *9* in place and is made gas-tight by a gasket *25*. Evidently it is intended also that *8* shall be a gas-tight fit in *1*. The soot-proof feature of the plug is due to the long path which any leaking current must travel over the lower end of the porcelain, and also to the protection afforded the latter by the cup *21*, which nearly closes the interior of the plug. A point *23* on the rim of *21* acts to concentrate the spark.



HERZ SOOT-PROOF SPARK PLUG.



BELDEN CROWN-WHEEL TRANSMISSION AND CHANGE-SPEED GEAR.

THE AUTOMOBILE

VOL. XII. No. 23

Published every Thursday by

THE CLASS JOURNAL CO.,

Flatiron Building, Madison Square,

NEW YORK CITY.

Cable Address - - - - Autoland, New York
Long Distance Telephone - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States, Canada and Mexico, - One Year, $2.00
Other Countries in Postal Union, - One Year, $3.00

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ENGLAND:—Iliffe & Sons, Limited, 3 St. Bride Street, Ludgate Circus, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

To Advertisers—Copy or changes in orders for advertisements should reach us not later than 5 o'clock p. m. Monday for the issue of Saturday following.

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Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly).

Copies Printed in 1904, - - -	**639,300**
" " **This Issue, - -**	**13,500**
" " **Since Jan. 1, -**	**322,500**

An Epidemic of Fake Explosions.

It is unfortunate that the energies of the most enterprising daily newspapers to make a story out of some commonplace incident should be directed toward automobiles. In the leading New York papers one can read almost daily of "explosions" of gasoline machines that never occurred. The arrest for fast driving story has been worked to death, and so the "explosion" scare is played up in a stick or a column of plausible lies, which are calculated to prejudice the public against the use of machines, even by persons who never figure in police court speed cases.

We had occasion recently to explode a very picturesque narrative of an automobile "explosion," and now another false report that has been widely circulated calls for comment. A French touring car, owned by Mrs. Howard Gould, was standing outside of the Waldorf Hotel in New York recently, and some gasoline had leaked to the ground under the car, possibly from the carbureter. The match of a passerby started a blaze, which scorched part of the body, the dash and footboard on one side. A fire alarm brought out the nearest engine company and a powerful stream of water quenched the fire and badly damaged the more delicate fittings of the machine.

Next day the scareheads appeared in the dailies and, quoting the New York *Herald* as a fair sample, this is the sort of report the public read: "The expensive machine was partly wrecked by the explosion that followed. * * * The force of the explosion startled diners in the Waldorf-Astoria, who rushed to the windows. * * * The costly machine was a wreck, and only the rear portion escaped the fierce heat. * * * The damage is estimated at $8,000."

The truth is that there was no explosion whatever; that the gasoline tank was not in the least damaged and was nearly full of gasoline when opened after the car had been removed to a repair shop, and that a few hundred dollars will be sufficient to restore the car to its original condition.

Another failure to "explode" of a more serious character is recorded in our newspapers, which report the fire at the Beacon Garage in Boston. This was burned down a few days ago in what was termed by the department as one of the "hottest fires" in their experience. Not only had the building burned up, but the contents of the fuel tanks in the cars in storage had fed the flames, yet the mian gasoline supply tank of the garage was found intact after the fire, and when opened in the presence of responsible witnesses was found to contain 150 gallons of gasoline. It was a steel tank connected to a modern measuring pump, the latter being exposed to the most intense heat.

It will be recalled that a somewhat similar experience followed the destructive fire in the automobile district in Long Acre, London, a few weeks ago. In that case the gasoline was kept in two gallon cans in a tank buried in a pit beneath the floor. After the fire the stock of twenty of these cans was found intact, and in fact this gasoline was the only salvage, more than thirty cars on the floors above being consumed.

We do not wish to minimize the necessity for care in handling gasoline, for when care is taken a mishap is not even a possibility, and that is the desirable condition of affairs; but we do protest against the campaign of misrepresentation which the daily press is maintaining. Its attitude is incomprehensible. With the one hand it solicits business from the automobile trade, and with the other it sows lies. Perhaps there will be a harvest.

✷

The New Auto Bill in Michigan.

Conflicting reports come from Michigan regarding the reception of the new automobile law, which goes into effect June 15. Already doubts as to the constitutionality of certain clauses have been expressed, and there is talk of testing it in the courts.

A careful reading of the bill, with the provisions of bills in other states in mind, shows that it is not as burdensome as some of the laws now in force elsewhere. It is long-winded, and contains some complicated clauses about the behavior of the autoist when meeting or passing other road users on the highway, but the speed clause, (which is the most essential to autoists) is quite liberal, permitting rates of 25 miles in the open country, 8 miles in the built-up portions of towns and cities, and 15 miles in all other portions, and under these limitations placing on the driver the responsibility of going at a rate of speed "reasonable and proper."

Another clause permits the setting aside of any public highway for "speed tests or races," provided, of course, that proper notice is given.

In the clause concerning arrests, it is provided that an officer on making an arrest may release his prisoner if the latter deposits with him "a sum equal to the maximum fine for the offense for which such arrest is made." The officer is to give a receipt for the "sum" (the bill does not say cash), and notify the autoist to appear before a magistrate on that or the following day. The security is to be returned when the person is admitted to bail. This provision is held to be unconstitutional, on the ground that it is a purchase of liberty for other than lawful bail.

While this may be so, it will doubtless be a convenience to many drivers, on occasions, to be able to continue on their way after arrest, and not be obliged to go immediately to the police station.

We believe the wisest course that Michigan automobilists could adopt would be to accept the provisions of the bill in good faith and give it a fair trial. Any immediate aggressive action would only alienate a large section of the non-motoring public and very likely result in more repressive legislation in the future.

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Evolution in the Industry.

No other large industry in the country is undergoing so rapid a process of evolution as the automobile industry. Just what the results will be when a more mature growth is reached none can safely predict. In fact, under existing conditions, one intelligent guess is as good as another. On one point only can there be no doubt, and that is the ultimate growth into an enormous national industry that will supply not alone home needs, but will reach out in an extensive export trade. Those whose business brings constantly in review before them the constructional and commercial activities in the industry cannot fail to note the indications.

One of the most recent of these is the entrance of the powerful and thoroughly organized American Locomotive Company into the field of automobile construction, as announced elsewhere in this issue. To the problem it brings not only the resources of great capital and of huge manufacturing facilities, with a close acquaintance with all sources of supply of high-grade materials, but also an expert knowledge of trade methods, home and foreign. The appearance of this great corporation in the industry is significant. It does not enter merely as a combination of capital brought together from widely varying interests for the pur-

pose of sharing in supposed or actual profits in the industry. On the contrary, it brings to the problem a highly organized machinery developed in the building of an apparatus which has much in common with the automobile—the locomotive. Its success, which will depend solely upon its selection of what is applicable in locomotive construction and rejection of what is inapplicable, will surely mean the entrance of other large manufacturing combinations into this field. The promoter has almost virgin soil in the automobile.

Another indication comes in the form of an unauthorized statement which has been curent in automobile circles for some time that a Michigan factory is preparing to market several thousand cars at the retail price of $400 each. A rigid adherence to standard specifications and a process of manufacture on a huge scale might make such a venture profitable, and would certainly aid in the spread of automobilism among a large class which considers present prices prohibitive. In automobiling, like anything else, a man is likely to get what he pays for, and those who are able to purchase cars at present figures will doubtless do so, and find they have made no mistake.

The significance of the intention, to the industry, is the confidence it expresses in the purchasing power of a public which has not as yet given the automobile any serious attention.

PLAN CARBURETER EXPERIMENTS.

The second monthly meeting of the Mechanical Branch of the Association of Licensed Automobile Manufacturers, held in New York on June 2, was devoted to the exchange of ideas on and experiences with carbureters. Papers on this subject were read by Hiram Percy Maxim, of the Electric Vehicle Co.; D. Ferguson, of the Geo. N. Pierce Co., and H. W. Alden, of the Electric Vehicle Co. It was agreed by the members that the principles underlying carburation and the construction of carbureters were but vaguely comprehended, and that in order to make further progress along correct lines investigation was necessary. It was therefore decided to commence a series of laboratory tests of carbureters as the beginning of a move to get at the bottom of the subject and build on scientific principles. A committee consisting of F. D. Howe, H. W. Alden and H. E. Coffin was appointed to arrange for laboratory work. At the July meeting, each engineer will bring with him one of his carbureters to be tested. It is expected that this frank and open comparison of various types will lead to the clearing up of many important points in carbureter construction.

It is sometimes necessary to do fancy driving, make abrupt stops and perform other "stunts" to get out of tight places; but avoid doing such things for the sake of "showing off." There is nothing to be gained and much to be lost by such tricks.

NEW LAW FOR MICHIGAN.

Holmes' Bill Passes Legislature and Awaits Governor's Signature.

Special Correspondence.

DETROIT, May 29.—The Holmes automobile bill passed the senate on May 24, amended, and the following day was sent to the house for concurrence in the amendments. It then passed the house, and now only awaits the Governor's signature to become a law.

The bill in its amended form is considered reasonable, yet the automobilists of Michigan think that there is plenty of room for improvement. The speed provisions are 8 miles an hour in business sections of cities, 15 miles an hour in residence districts and 25 miles an hour on country roads.

There was a clause in the original bill providing that all fines collected for violations should go into the good roads treasury, but this was shown by Senator Brown to be unconstitutional and for this reason it was stricken out. It also provided for a fine only for the first two offences, the amount being $25, but it was amended by adding an alternative prison clause, so that if the offender does not pay his first fine he may be sent to jail for 10 days, and twenty days for the second offence. Senator McKay of Detroit was the only senator to vote against the bill on its final passage.

The new law is very similar to the New Hampshire law enacted this spring. It requires the registration of all cars in the State with the Secretary of State at a fee of $2, and the carrying of not only the customary large number tag on the back of the car, but also a two-inch aluminum seal attached conspicuously to the machine. Nonresidents registered in other states or in a foreign country and carrying number tags with the name or initial of the state are exempt, provided the law of such other state or foreign country has a similar exemption clause.

Manufacturers and dealers must register one vehicle of each type made or dealt in at a fee of $2, but may obtain duplicate license seals for such cars as he wishes to drive on the highway at an additional fee of 50 cents each.

Chaffeurs must secure registration certificates at a fee of $1.

All such fees paid to the secretary of State must be applied toward the furthering of good roads for the state at large after the expense of registration blanks, books and seals has been paid for.

Sections 14 to 18 inclusive give explicit orders regarding how the driver and other male occupants of an automobile must act when meeting or passing other users of the highway and in case of an accident.

A feature that is as clearly a concession to the automobile interests as the twenty-five-mile limit in the open country is the authority given in section 19 to local authorities to set aside for a given time a specified highway for speed tests or races. Notice of such race or speed test must be published for six weeks prior to the event in a newspaper published and circulated in the county, and notices posted along the road at quarter-mile intervals for three weeks before the contest.

SPRINGFIELD ARRESTS NOT FOUGHT.

Special Correspondence.

SPRINGFIELD, MASS., June 2.—With one exception the twenty-five local automobilists summoned for violation of the speed ordinance paid their fines in police court today, to which date the cases were continued upon arraignment last Monday. Pleas of nolo contendere became general after the trial of the first defendant, and assessments of $5 were levied in each case.

Lacking the organized support of the Springfield Automobile Club, and in the face of evidence of violation brought by the prosecution, the intention of fighting the cases faded away.

MASSACHUSETTS' NEW LAW.

In Force June 3 Killing All Existing Local Regulations.

Special Correspondence.

BOSTON, June 3.—The new speed law went into effect to-day, and all the local regulations have been nullified. Until the selectmen of towns and the city councils of cities find it desirable to make new regulations, automobilists no longer need fear trouble unless they exceed the state speed limit. If new local regulations are made they may be at any speed, greater or less than the general speed limit, but they must be published in a newspaper and posted with signs provided by the Highway Commission. Moreover, there is an appeal from all local regulations to the Highway Commission. The sign which the commission has adopted for use on roads for which special regulations are made, is to be of enamelled iron 16 by 24 inches in size, with a green background and white letters, and is to be suitably framed and attached to a post.

In connection with this sign the Highway Commission made trouble for itself in a circular letter which it recently sent to town and city authorities. In this letter attention was called to the new law, and the request made that if special regulations were adopted, that the commission be notified immediately so that it might provide the necessary signs. Unfortunately in its design of the proposed sign, the number 10 was used to indicate the miles per hour, not that the Commission meant to suggest ten miles an hour, but that this happened to be a convenient figure to use in the sample. Some of the selectmen did not stop to read the letter carefully or to study the law, but went to work and at once passed an ordinance setting a speed limit of ten miles an hour. One town on the top of a mountain in the western part of the state, where automobiles almost never go unless they are lost, has passed a ten-mile rule.

All ordinances made before the new law went into effect were, of course, nullified today, and the selectmen have their labor for their pains. These ordinances also make it necessary for the secretary of the commission to issue a new letter explaining that the recently made rules are void and that the Commission does not want a ten-mile-an-hour limit. It is expected that the commission will have must travelling to do during the summer, for it is required by the law that hearings on appeals on local regulations be held in the cities or towns where the regulations were made.

Though present developments seem to indicate a desire on the part of country towns to make a low speed rate, it is thought that when the law is more fully understood there will not be so many local regulations as there were previously. At any rate there will be no more four and six miles an hour rules, for should they be made, the automobilists would surely take an appeal and the Highway Commission, it is believed, would sustain the autoists, except perhaps under very unusual circumstances.

MILWAUKEE MEETING MOST SUCCESSFUL.

Enthusiastic Crowds Witness First Races of Season at State Fair Park—Oldfield and Green Dragon Star Attractions—No Accident Mars the Two-Days' Sport.

Special Correspondence.

MILWAUKEE, June 3.—The first thoroughly alive automobile races ever held in Milwaukee attracted about 2,000 persons to State Fair Park yesterday afternoon. Nearly one-fourth of this number occupied automobiles, which were drawn up inside the half-mile track facing the grand stand, and presented a very pleasing picture. No accidents occurred to mar the occasion, and the several events were run off with unusual promptness. Just two hours were consumed in carrying out an eight-event program. Everybody was interested in Barney Oldfield, with his *Green Dragon*, Charles Soules with a Pope-Toledo, which, however, did not come up to expectations, and Dan Canary with his Thomas *Tornado*.

When Oldfield appeared on the track for the last event he was greeted with tremendous applause, and demonstrated his appreciation by making one of the five miles in 56 seconds. The other two entries in the race were Canary and Soules. Oldfield took the lead from the start and maintained it throughout the five miles, defeating Soules by one-eighth of a mile and Canary by half a mile.

The sixth race, a substitute for the novelty race, was productive of a most exciting finish. Orlando Weber and Henry Nelson, in Pope-Toledos, and George Odenbrett, in a Winton, were the entries. The Winton got a bad start, and after the half-mile post was passed the contest was between the Pope-Toledos. Nelson led slightly until near the finish, when Weber jumped his car ahead and won by the narrow margin of three feet.

In the motorcycle race Walter Davidson demonstrated the superiority of the larger motor and defeated H. A. Zerbel, the Milwaukee champion. Davidson led all the way and at the finish Zerbel was an eighth of a mile to the bad.

The seventh race, a five-mile handicap, was one of the most spectacular of the day. Owing to the fact that there were several dark horses in this event, it was difficult for the management to arrive at just handicaps. Zerbel, in a Merkel car, was given a handicap of 2:30, which proved somewhat too liberal, and he was returned the winner by a big margin.

The management of the races was excellent. Events were run off promptly and races substituted when drivers were not ready. The officials were: Sherburn Becker, referee; J. W. Brown and John H. Moss, judges; Fred Rugee, Frank R. Bacon and Louis Allis, timers, and Richard Bacon, Jr., of Chicago, starter.

The summaries follow:

First race, three miles, open to Cadillac cars of equal horsepower.—August Jonas won; William Jonas, second; Tony Anderson, third. Time, 7:13 2-5.

Second race, three miles, free-for-all, for motorcycles—Walter Davidson won; H. A. Zerbel, second. Time, 4:24 4-5.

Third race, five miles, open to one-minute class cars.—Charles Soules, Pope-Toledo, won; Dan Canary, Thomas *Tornado*, second; C. A. Coey, Thomas, third. Time, 5:38 2-5.

Fourth race, three miles, open to Ramblers fully equipped.—Arthur Gardner, first; Harry Wade of Waukesha, second; Clyde Leppo, third. Time, 543.

Fifth race, three miles, open to cars listing at $2,000 and less.—Joseph McDuffee, Stoddard-Dayton, won; H. Zerbel, Merkel, second; Dr. Elmergreen, Winton, third; E. W. Arbogast, Reliance, fourth. Time, 4:57 2-5.

Sixth race, substituted for third, five miles, novelty, to carry three passengers.—Orlando Weber won; Henry Nelson, second (both with Pope-Toledos); George Odenbrett, Winton, third. Time, 8:45.

Seventh race, five-mile handicap—Coey (Thomas), scratch; McDuffe (Stoddard-Dayton), 0:20; Orlando Weber (Pope-Toledo), 0:30; Arbogast, (Cleveland), 1:15; Arthur Gardner (Rambler), 1:30; Zerbel (Merkel), 2:30.—Won by Zerbel (time, 8:47); Coey, second (time, 6:17 1-5); Gardner, third.

Eighth race, five miles, Cream City Sweepstakes for Sherburn Becker trophy.—Barney Oldfield won; Charles Soules, second; Dan Canary, third. Time, 4:59.

SATURDAY'S EVENTS.

MILWAUKEE, June 3.—The second day of the race meet was a decided improvement both in attendance and quality of events over Friday. The warmer weather and the closing of business houses at noon on Saturday were responsible for the increased attendance.

As was the case on the opening day, the last event on the program, in which Barney Oldfield, Charles Soules and Dan Canary were entered, proved the most interesting. Oldfield jumped to the lead at the start, with Soules second and Canary third, and finished in this order, the only change as the race progressed being that Oldfield increased his lead over Soules, and Soules over Canary.

The race that was most closely contested was the second heat of the three-mile match event, in which C. A. Coey and Jerry Ellis took part. Ellis won the first heat, but Coey got the pole in the second heat at the start, and made good use of his advantage and won "by a nose."

SUMMARIES.

First race, three miles, for motor cycles.—First, Percy Mack, Davidson; second, Walter Davidson, Davidson. Time, 3:58 1-5.

Second race, three miles, for Pope-Toledo cars.—First, Orlando F. Weber. Time, 4:17.

Third race, three-mile match race.—First heat won by Jerry Ellis, Apperson, time 3:25 4-5; second heat won by W. A. Coey, Thomas, time 3:41 2-5.

Fourth race, five miles, 1:00 class.—First, Charles Soules, Pope-Toledo; second, Dan Canary, Thomas *Tornado*. Time, 5:19 2-5.

Fifth race, three miles, for Wintons.—First, R. G. Bates; second, George Odenbrett. Time, 5:38 4-5.

Sixth race, for Ramblers.—First, Arthur Gardiner; second, Clyde Leppo. Time, 5:49.

Seventh race, five-mile handicap.—First, Jerry Ellis, Apperson (scratch); second, Odenbrett, Merkel (1:50). Time, 5:43 1-5.

Eighth race, for cars listing at $2,000.—First, Joseph McDuffy, Stoddard-Dayton; second, Odenbrett, Merkel. Time, 4:27 2-5.

Eighth race, Milwaukee Motor Derby, five miles—First, Barney Oldfield, Peerless *Green Dragon;* second, Charles Soules, Pope-Toledo. Time, 4:50 1-5.

AUTOCYCLE ENDURANCE RUN

First Annual Event of 'Frisco Club Most Successful—Eighteen Starters.

Special Correspondence.

SAN FRANCISCO, May 28.—Eighteen riders started in the 256-mile endurance contest of the San Francisco Motorcycle Club at 3:30 o'clock this morning, and ten of the number finished at 8:30 to-night with a perfect score to their credit. The remaining number did not complete the run. T. A. White, one of the contestants, riding the only Rambler in the run, was thrown on a hill early in the contest and suffered a sprained wrist.

The event was the first annual endurance run of the club, and the course was from Oakland to Del Monte and back by the way of San Mateo and Redwood City to San Francisco. The starters were as follows:

Name	Machine	Weight of machine	Stroke inches	Bore inches	Horsepower	Drive	Weight of Rider
H. G. Corbaley	Indian	110	3	2 19-32	1 3-4	Chain	170
L. B. Smith	Indian	110	3	2 19-32	1 3-4	Chain	130
C. C. Hopkins	Indian	110	3	2 19-32	1 3-4	Chain	170
J. H. Nash	Indian	110	3	2 19-32	1 3-4	Chain	165
C. A. Bowman	Indian	110	3	2 19-32	1 3-4	Chain	160
F. E. Carroll	Indian	110	3	2 19-32	1 3-4	Chain	141
F. A. Genung	Duck	110	2 7-8	3 1-8	1 3-4	Belt	180
M. Fink	Yale-California	110	2 5-8	3 1-4	2	Belt	180
F. E. Karslake	Duck	115	3 1-4	3 1-4	2 1-4	Belt	140
J. H. Fry	Reading-Standard	110	3	2 19-32	1 3-4	Chain	150
J. M. Litchfield	Indian	110	3	2 19-32	1 3-4	Chain	138
H. Anthony	Yale-California	110	2 5-8	3 1-4	2	Belt	135
F. H. Puck	Yale-California	110	2 5-8	3 1-4	2	Belt	135
O. F. Dennis	Indian	110	3	2 19-32	1 3-4	Chain	129
I. L. De Jongh	Yale-California	125	2 5-8	3 1-4	2	Belt	185
David Wilkie	Duck	125	3 1-8	2 7-8	1 3-4	Belt	125
Thomas A. White	Rambler	110	3	2 19-32	1 3-4	Chain	160
W. H. Husted	Armac	110	3	3 1-2	3	Belt	150

The first ten completed the run with perfect scores. Litchfield, Anthony and Puck had perfect scores as far as Del Monte. Those who completed the run arrived in the city at 7 o'clock and rode about town for an hour and a half before showing up at the finish line.

The five-mile handicap also proved interesting. There were six starters, Jerry Ellis, Apperson, scratch; Orlando Weber, Pope-Toledo, :25; Harry Nelson, Pope-Toledo, :55; Joe Merkel, Merkel, 1:40; H. Odenbrett, Merkel, 1:50; R. B. Ramien, Franklin, 1:55. The Franklin machine had gone nearly a mile before Ellis started, but after the third mile Ellis was the only one in the race. One by one, he passed the other machines, which appeared to be standing still.

The following are the summaries of Saturday's events:

Driving through a crowded street with one hand on the wheel and the other flourishing a cigarette may be picturesque to greenhorns, but it fails to arouse feelings of admiration in those who know anything about automobiles.

CLEVELAND CLUB'S HILL CLIMB TEST.

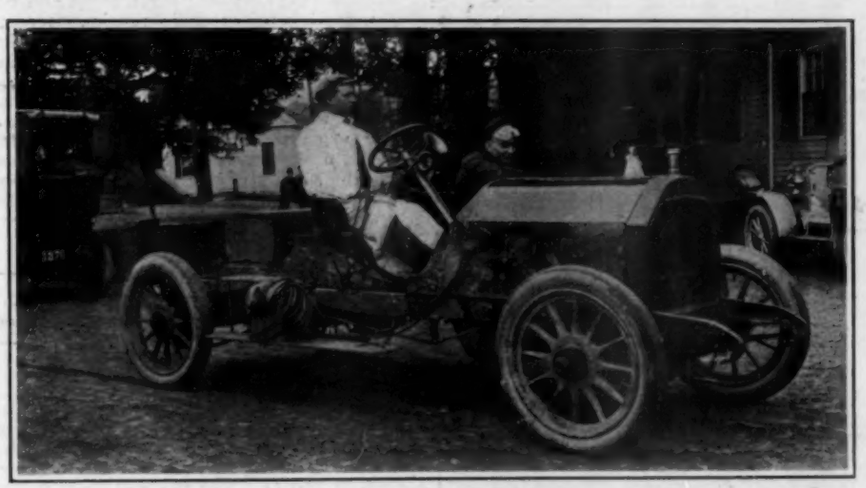
Frank Stearns Ascends Mile Grade of 12 Per Cent. from Standing Start in 1:19 4-5, at Gates Mills, in a 40 Horsepower Stearns—Club Will Repeat Event Annually.

Special Correspondence.

CLEVELAND, June 3.—Members of the Cleveland Automobile Club and their friends who went to Gates Mills Decoration Day, enjoyed an exceedingly pleasant run and witnessed one of the most interesting sporting events ever held in this part of the country. It was the first hill-climbing contest ever held around Cleveland, and proved so successful that the event will be repeated annually by the club. About a dozen cars lined up in front of the Hollenden Hotel at 9 A. M., for the first run of the season. Others straggled along later, encouraged by the clearing away of the clouds, until by noon about forty cars were at the scene of contest.

The village of Gates Mills lies in the Chagrin River valley twenty miles east of the city, and is noted as one of the most beautiful spots in northern Ohio. The west hill leading up from the valley to the surrounding plateau has long been known as the stiffest grade within many miles of Cleveland. An even mile had been measured off, starting with a level approach of 300 or 400 feet in the valley and finishing at a mark at the top of the incline, but a big moving van barred the way on the day of the contest, making it necessary to start farther up, so that the course was about 150 feet short of a mile. Three sharp turns made it impossible to see more than a third of the course from any point. The maximum grade is about 15 per cent., while the average is probably about 12 per cent., the rise for the mile being about 375 feet. The road surface was broken and uneven, with many ruts and stones.

LOOKING DOWN GATES MILLS HILL DURING HILL CLIMBING CONTEST.



FRANK STEARNS, WINNER OF HILL CLIMB, IN 40-HORSEPOWER STEARNS CAR.

A man with a flag was stationed at the starting point and at each of the three turns on the hill, and another man at the finishing point. The timers were midway up the hill and received the starting signal from the man at the second turn and the signal for the finish was flagged back to them from men above.

The events were open only to members of the Cleveland Automobile Club, so only eight drivers took part, and it was decided not to attempt to classify the cars and to place no restrictions on the entries. The trials were all from a standing start and each contestant was required to return down the hill to the mark before the next one started. Spectators' cars were scattered along the hill at various points, where there were driveways leading from it, so that everyone had an excellent view of the sport.

Frank Stearns made the first trial, in a new 40-horsepower stripped Stearns. His car swung from side to side alarmingly and it seemed that all four wheels were on the ground together hardly any of the time. It was a daring run, but the first flagman failed to catch the signal and the time was not caught. In the second attempt the time was 1:19 4-5, the best of the day.

Harry Savage made a hair-raising run with a fully equipped 32-horsepower Peerless in 1:30, his car swerving badly on the turns and taking the bumps and stones with leaps and bounds.

R. H. Magoon, with a 35-horsepower Pope-Toledo, was third in 1:47 4-5. C. C. Ferguson, with his new 45-horsepower Pope-Toledo, had trouble with his high speed gear, and had to drop back to intermediate, his time being 2:21 4-5. The other finishers were, E. R. Emmerman, 32-horsepower Peerless, 2:40; R. E. Bergman, 38-horsepower Royal, 2:45 3-5; C. R. Russell, Buick, 3:18.

The officials were: A. Ward Foot, starter; Leo Dautell, referee; P. L. Hussey and George Collister, timers; Joseph Shawaker, George S. Davis, C. W. Sterling, George Bowler and Harry S. Moore, flagmen.

Dinner for the party was served at Maple Leaf Inn, a pretty little country tavern noted for its chicken dinners, and the cars returned to the city by different routes, some doing to Painesville and others down the Chagrin River valey to Willoughby.

PHILADELPHIA MEET ABANDONED.

Special Correspondence.

PHILADELPHIA, June 3.—The automobile race meet scheduled for this city for Saturday, June 24, will in all likelihood be abandoned. Although the sanction was granted in the name of the Automobile Club of Philadelphia, that organization had but a perfunctory interest in the affair. A promoting syndicate, of which a local newspaper man was the active spirit, induced the club to apply for the sanction, promising to take all the work off its hands. What with their recent legal battles, the hunt for and removal to new quarters and the carrying out of their recruiting plans, the club officials have been too busy to promote and carry on the preliminaries of a race meet.

The moneyed people back of the promoter have dropped the matter entirely, and now the whole affair seems to be off.

JAIL SENTENCES FOR SPEEDERS.

Sentences of five days in jail, coupled with fines of fifty dollars, were dealt out to two chauffeurs by the Court of Special Sessions, New York, on June 6. District Attorney Jerome was largely instrumental in securing this heavy punishment, believing that only by the adoption of such measures could illegal speeding (for which the prisoners had been previously convicted) could be stopped or even checked. The offenders are Henry Roger, chauffeur for J. E. Deman, and Jospeh Fernandez, chauffeur for Morris Mendham, all of New York.

EXPORTS FOR TEN MONTHS.

Exports of automobiles and parts thereof from the United States for the ten months ended April, 1905, aggregated $1,876,063, showing an increase over the same period of 1903-1904 of $333,528, and an increase over the ten months ended April, 1903, of $981,542.

ST. PAUL TOUR INTEREST GROWING.

Non-Stop Division from Chicago Planned to Make the Run in One Day—Sections Promised from Winnipeg, Duluth, St. Louis, Kansas City, Detroit, Indianapolis and Louisville.

Special Correspondence.

ST. PAUL, June 3.—There will be three sections of the Chicago-St. Paul automobile run, which will be held early in July. One section will leave Chicago June 30, and will comprise those who have low-powered cars, those who wish to travel slowly and those with powerful cars who wish to spend Sunday at some of the lakes between Chicago and St. Paul. The second section, which it is expected will include more than half of the entries, will leave Chicago on July 1.

The third section, which has just been arranged, will start July 3, the day before the entry into St. Paul, and will include the most powerful cars, which will make the run without a stop. This section has been arranged as a result of numerous requests from owners of powerful cars, who maintain that this will demonstrate the practical utility of the automobile better than any other means.

Secretary Ledy, of the A. C. of St. Paul, is receiving letters from scores of points in the Northwest, informing him that special divisions will make the run to St. Paul to attend the two weeks' carnival in the Twin Cities.

A. Emmett, secretary of the Winnipeg Automobile Club, has written that that city will send a large delegation, most of whom will tour all the way. Winnipeg has from 150 to 200 cars, and the members of the club are making a special effort to make a good showing at St. Paul. The Winnipeg delegation will tour to Grand Forks, N. D., where the automobilists will enter the Grand Forks-St. Paul run, starting from Grand Forks July 1, and will make a tour through Fargo and the lake region in the northwestern part of Minnesota, arriving in St. Paul on the afternoon of July 4.

Duluth will send about thirty cars. A special division will make the run from Racine, Wis., as planned by the Racine club. Milwaukee and Kenosha will send delegations to Chicago, and a party from Madison, Wis., will join the Chicago-St. Paul run at Freeport, Ill.

St. Louis, Kansas City, Louisville, Indianapolis, Detroit, Des Moines, Akron, O., and other cities in the Middle West expect to send delegations, which will enter the tour either from Chicago or Omaha.

St. Paul automobilists will make several inspection trips in a week or so. They will go in four divisions, one inspecting the route from St. Paul to Chicago, one the route from St. Paul to Duluth, another the roads to Grand Forks and the fourth those to Omaha.

NEW COLORADO DRIVEWAY.

Automobilists Plan Modern Road from Denver to Colorado Springs.

Special Correspondence.

DENVER, COLO., June 2.—Automobilists are booming an effort to construct a road from Colorado Springs to Denver. Already the project has assumed such shape that it is almost a certainty that the boulevard will be constructed within a short time.

In order that he may better handle the proposition, G. W. Genter has moved from Colorado Springs to Denver, and he will exert every effort toward interesting property owners and city and county officials in the construction of the road. Dr. C. A. Holder has been elected to succeed Mr. Genter as president of the Colorado Springs Automobile Club. The doctor was elected for his known advocacy of the road project, and it is assured that he will do all in his power toward its success.

It is the intention to make the road one of the finest in the country, to be constructed along most modern lines, and have it follow the natural lay of the land as far as possible.

The Colorado Springs Automobile Club has voted to back the project with all its might, and will confer with the Denver A. C. concerning the matter. The Good Roads Association of Colorado Springs and Gen. William L. Palmer are also working for the success of this movement.

ECONOMY TOURING CONTEST.

Novel Outing of Long Island A. C. on June 10-11.

The first Economy Prize Tour of the Long Island Automobile Club is scheduled to start from the clubhouse in Brooklyn at 8 o'clock on Saturday morning, June 10, and return on Sunday evening, June 11. The tour will be made to Southampton, L. I., a distance of ninety miles. Luncheon will be had en route, both ways, at the Cortland Hotel, Bay Shore. Dinner and breakfast will be had at Southampton, where the tourists will spend the night.

A handsome trophy has been offered by one of the governors of the club to the winner of the tour, which in reality is nothing more than a test of the several cars to show the cost of automobile operation under ordinary touring conditions, as this will be a tour pure and simple, and the club announces that speed regulations will be carefully observed, and touring conditions will prevail. The prize will be awarded the member who shall have carried his quota of passengers over the round trip at the least expenditure per capita for fuel, lubricants and repairs.

Trophy of Unique Design Offered for Dealers' Handicap Race at Chicago by Motor Car Supply Co.

The following conditions will govern:

Members must drive their own cars, and will also act as observers, as no official observers will be assigned; only members of record June 1, 1905, are eligible to compete; cars to carry full quota of passengers, but no allowance will be made for passengers in excess of car capacity; the award will be made on the two-days' record, and at the completion of tour on Sunday evening all reports and records must be turned in at clubhouse.

Waterproof record cards will be furnished all participants, one for each day's run, on which will be recorded the actual amount of supplies on board at time of start; number and weight of passengers; make, size and weight of car; weight of baggage; time of leaving; time of arrival at Southampton, and time of arrival at clubhouse on return; an itemized account of repairs made and supplies purchased, and cost of same.

The following allowance as a basis for charges will be made:

Passengers, $4.53 each, being the cost per capita via railroad from Brooklyn to Southampton and return; gasoline, 25 cents per gallon; lubricating oil, 60 cents per gallon; time, engine or general repairs, 60 cents per hour; time, tire repair, 50 cents per hour (same basis of charge for owner, or passengers who assist, or repairmen, en route); punctures, inner tube, 75 cents per hour; punctures, shoe, no charge; blow-outs, inner tube, 75 cents each; blow-outs, shoes, no charge; new parts, plugs and the like, catalog price; chain repairs, 50 cents per hour and catalog price for new links. Hotel and general expenses not to be included.

The idea is a novel one, and so far as known this is the first tour of the kind ever promoted. The information gained should prove invaluable to the participants, and the results of the competition will be read with interest by users of automobiles throughout the country.

'FRISCO TO SANTA CRUZ.

Two-Day Run of California Club on June 10-11.

Special Correspondence.

SAN FRANCISCO, CAL., May 27.—The Automobile Club of California has announced the general plans for its second run of the season, to be held Saturday and Sunday, June 10 and 11. The run will be to Santa Cruz and return, a distance of about 175 miles from San Francisco, and will be in charge of C. C. Moore, of the club's executive committee. Mr. Moore has been an enthusiast with regard to the beauties of the Santa Cruz run for some time and promises some unusual sport.

Both the citizens and officials of Santa Cruz county have done much to encourage automobiling, not only in the way of opening up roads, but in the matter of road construction as well. When the matter of opening the road between Santa Cruz and San José came up some months ago, at which time the supervisors of Santa Clara county, in which San José is situated, refused to permit automobiles on their side of the mountain road between the two counties, the Santa Cruz supervisors gave evi-

dence of a good deal of sporting spirit by offering to test the legal right of the Santa Clara officials to close the road. They declared that in case the Santa Clara people persisted in their refusal, they would themselves engage an automobile and run over the road in the face of the Santa Clara prohibition, giving the Santa Clara people a chance to arrest brother supervisors and fight the matter out in the courts. Before this action had been taken, however, the new State law went into effect and the road is now open, but so far it has been but little used, as certain repairs have been undertaken by the automobilists in the way of fences at dangerous points.

On account of this attitude of the Santa Cruz officials there is a very frendly feeling on the part of San Francisco machine owners, particularly among the members of the club, and an effort is being made to secure a large attendance on the run. Those participating will be allowed to select their own route and time of starting. The club will establish headquarters, where the members will rendezvous on Saturday evening, and an entertainment will be provided.

NORTHBOROUGH REGULATIONS.

Special Correspondence.

WORCESTER, MASS., June 5.—The selectmen of the town of Northborough, which is a few miles east of this city, are the first to announce local speed regulations as allowed under the new state law which became effective June 3.

Automobilists throughout the state who feel that the limit fixed is too low have fifteen days within which a petition properly signed may be filed with the State Highway Commission, and a hearing may be granted both parties.

The selectmen limit the speed of automobiles and other motor vehicles to ten miles an hour within a radius of one mile of the center of the town, and fifteen miles an hour elsewhere within the corporate limits.

BUFFALO PARADE POSTPONED.

Special Correspondence.

BUFFALO, June 3.—The parade of the Automobile Club of Buffalo, the first of the season, which was scheduled to take place this afternoon, was postponed until Saturday, June 10, and from present indications a large number of machines will be in line.

MINNEAPOLIS PARADE.

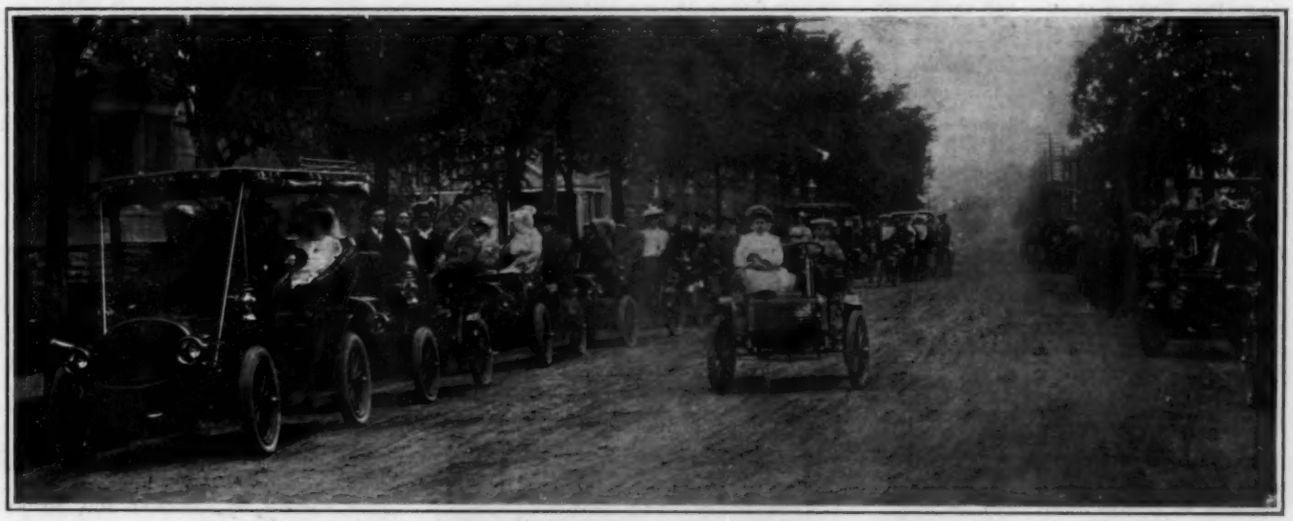
Evening Procession of 350 Cars Led by Mayor Jones.

Special Correspondence.

MINNEAPOLIS, June 3.—Three hundred and fifty cars took part in the annual Minneapolis automobile parade held last Thursday. It was the greatest turn-out of autos that has ever been seen in the northwest.

The machines formed on the side streets off of Park avenue, from Seventeenth to Twenty-eighth streets. The entire route of the parade was lined with spectators, indicating the great interest taken in this city in automobile affairs. None of the machines was decorated, but the line proved interesting enough. It was quite dark when the machines began to move down Park avenue, and the hundreds of headlights made the scene a brilliant one.

One of the striking features was the first auto, a large van of the Pillsbury flour mill, on which was built a float for the *Journal* newsboys' band. Mayor Jones occupied an electric stanhope, driven by F. G. Winston, Jr. Then came Ralph W. Wheelock, the mayor's private secretary, followed by an electric coupe placed at the disposal of the newspaper men.



TOURING CARS LINED UP IN SIDE STREET AWAITING START OF THE MINNEAPOLIS PARADE.

NASHVILLE ANNUAL PARADE.

Pretty Women in Flower-Covered Cars Feature of Festival.

A new feature of the annual May festival held at Nashville, Tenn., and one in which the greatest interest seemed to center, was the automobile division of the flower parade on May 26. All of the cars were richly and tastefully decorated, and the work of the judges in making selections of winners of the several prizes was most difficult.

Five cash prizes were offered for the most artistic decorations, the first being $100 in gold; second, $25; third, $15, and the fourth, $10. The first prize was awarded to Mrs. J. Cleves Symmes, whose car was a mass of Marie Van Houte roses and rosebuds, 2,700 flowers being used in its decoration, while artificial smilax and wax rose leaves furnished the necessary green coloring. In addition white satin streamers and bows were profusely used. The second prize went to Joseph Warner, the third to Miss Shirley Cummings, and the fourth to Joseph Duncan. All of the prize winning cars were occupied by young women most appropriately gowned, the whole producing a most pleasing effect.

The award of prizes was made at Centennial Park, where about the walls of the historic Parthenon thousands of persons had gathered to witness the beautiful pageant.

'BUS LINE TO BULLFROG.

Steamers to Replace Old Time Stages to Nevada Mining Camps.

Special Correspondence.

SAN FRANCISCO, May 27.—Fred W. Gregory, manager of the local White garage, leaves this week for the southern part of the state with the first shipment of a dozen White cars to be used on a stage line between Los Vegas and Bullfrog. Both places are in Nevada, the latter being the center of a new mining district which is attracting a great deal of attention at the present time, and Los Vegas is a railway station on the line of the new Los Angeles and Salt Lake road.

At present the only way to get into the Bullfrog district from San Francisco is by the way of Reno and Tonopah, with a long stage haul at the end. The proposed route will take about 25 hours of railroad and 10 hours of automobile run, which will shorten the present time for the trip about 10 hours.

Mr. Gregory is interested in the stage company and is satisfied that the venture will result in changing the trend of travel to the new camp.

The matter of transportation into all the new mining camps has been a serious problem on account of the lack of water for horses and the general difficulties of desert and mountain travel. Automobiles have been tried between Tonopah and Goldfield with success, and it is believed that they will prove the solution of the problem. There is a good deal of interest in the Gregory venture, particularly on account of the use of steam cars in a section of the country where water is a pretty scarce article.

DETROIT CLUB ELECTION

Members Enthusiastic Over Progress on Country Club at Pine Lake.

Special Correspondence.

DETROIT, June 5.—Enthusiasm was high last Wednesday night at the annual meeting of the Automobile Club of Detroit. The reason therefor was the announcement that the new country club house of the organization at Pine Lake, twenty-five miles from Detroit, is very near to completion.

The property, which is leased by the club, is a handsome piece of land on one of the most beautiful small lakes in this section. Pine Lake is about a half mile south of the famous Orchard Lake, whereon is located the Michigan Military Academy. Orchard and Pine lakes are the meccas for thousands of tourists every year, but the plot taken by the club, at a rental of $500 a year, in addition to the leasing price, is in a very secluded locality. It will be out of the way of the swarm of transient visitors and yet be very accessible.

The club property has a frontage of 1,700 feet on the lake, and embraces nine acres of ground. The building which is being put up is now well on toward completion. It is partially fireproof, being built of cement, plaster and shingle, 75 by 50 feet. The entire floor area is 5,000 square feet. There is an assembly room, dining hall, smoking room, ladies' room, and screened verandas that may be used for dining purposes. Seven sleeping rooms have been provided for the accommodation of guests who drive out in the evening and do not care to make the trip back. A shelter built in addition to the house will accommodate eight large machines or sixteen small ones.

The run from Detroit to Pine Lake is a delightful one of twenty-five miles, and the members of the club who have gone out have done it in about an hour. The road from Detroit to Pontiac is an excellent one, and from Pontiac on to Pine Lake is one of the finest stretches of macadam road in Michigan. The old club house, just south of Birmingham, had the peculiar drawback of being too near Detroit to give a good ride, and too far away for merely an evening run.

Licenses to the number of 1,467 have been issued to automobile owners in Detroit, yet the membership of the club is but 150. A special effort to greatly increase the membership will soon be made by the membership committee.

At the annual election of officers, held by the directors immediately following the general meeting, Edwin S. George, the well-known furrier, was elected president. Mr. George had been president for two months before the election, to fill out the unexpired term of Fred O. Paige, resigned. De Witt Loomis resigned as secretary at the same time that Mr. Paige resigned, and Harry Skillman, advertising manager for Parke, Davis & Co., was elected in his stead. Mr. Skillman was also re-elected. Mr. Paige consented to become first vice-president, and was elected. D. M. Ferry, Jr., was elected second vice-president, and L. H. Case, treasurer. Harry Skillman, D. M. Ferry, Jr., and Harry G. Hamilton of Pontiac, were elected members of the board of directors for three years.

The new house committee are Messrs. Hamilton, Ferry and Paige, and the chairmen of the other committees are as follows: Membership, De Witt Loomis; law and ordinances, D. M. Ferry, Jr., who is a member of the state legislature; tours and runs, G. A. Harris. Samuel J. Serrell, of Pontiac, is consulting engineer.

DAYTON CLUB'S PROGRAM.

Busy Summer Season Planned—Events for July 4 Race Meet.

Special Correspondence.

DAYTON, O., June 3.—Elaborate preparations are being made by the Dayton Automobile Club for numerous runs, races and outings during the summer months.

The Dayton club is in the sixth year of its existence. It has eighty members and one of the handsomest city clubhouses in the state of Ohio. The profits realized from the race meets held during the season will be added to the fund for the construction of a handsome country clubhouse, plans for which are now being prepared.

The feature of the summer events will be the big annual race meet to be held at the Dayton Fair Grounds on July 4. A general committee, consisting of Dr. C. A. Bonner, president of the club; Carl Bauman, J. D. Artz, A. M. Dodds, H. M. Carr, C. B. Wolf, Harry Cappell, Adolph Latin and Albert Pretzinger, has arranged the following program for the annual meet:

Three miles for stock cars, stripped, 881 to 1,432 pounds.

Three miles for stock cars, fully equipped, 1,432 to 2,204 pounds.

Five-mile special race open to all machines.

Three-mile special race for women drivers.

Three miles for stock cars, equipped, 881 to 1,432 pounds.

Three miles for heavy touring cars, loaded.

Three-mile stop and start race for light touring cars, loaded.

Three-mile special race for steam cars.

Heat race for special racing cars only, best two in three heats.

Three-mile stop and start race for heavy touring cars, loaded.

Three miles for light touring cars, loaded.

Pursuit race by fastest three machines of the day.

MANUFACTURERS' CLUB HOUSE, WHERE PHILADELPHIA A. C. HAS SECURED ROOMS.

TO PREVENT SPEEDING.

Worcester Club Will Suspend Members—Club Run to Hartford.

Special Correspondence.

WORCESTER, MASS., June 3.—The board of governors of the Worcester A. C. has unanimously voted to adopt the following resolution with regard to speeding:

"Whereas the indiscretion of a few automobilists bring upon all of us the wrath of the public, and is largely responsible for much adverse legislation, be it resolved that the Worcester Automobile Club puts itself on record as discountenancing high speeding and its course in the future will be to suspend any of its members known to have been driving unreasonably, whether convicted in the court or not."

The officials of Leicester and Spencer, which towns are on the direct route between New York and Boston, report that speeding has become so general, especially on Sundays, that the towns are to be posted at once, and it is expected that wholesale arrests will follow, as the officers claim that few cars pass through the towns at less than a 25-mile-an-hour rate.

About seventy-five members of the club took part in the run to the races of the Bay State Automobile Association at Readville, Decoration Day, President John P. Coghlan leading the contingent. A similar run will be made to Hartford to attend the Charter Oak races, which will be run on June 16 and 17, under the auspices of the Hartford A. C.

PHILADELPHIA CLUB IN NEW HOME.

Special Correspondence.

PHILADELPHIA, June 3.—The A. C. of Philadelphia officials have been busy installing themselves in their new quarters in the Manufacturers' Club building, No. 1409 Walnut street, and when things were straightened out a call was issued for a special meeting for Monday evening, June 5, when a plan of campaign for the summer will be discussed. On this occasion an innovation will be introduced which it is hoped will prove pleasant and profitable to the members. An expert qualified to talk on some such technical subject as "Tires," "Carbureters" and "Sparking Devices" will be present, and after his talk members will be allowed to question him on such points of his subject as may not have been made sufficiently clear to them.

MICHIGAN INDUSTRY RAPIDLY GROWING.

Government Report Shows 22 Plants and a 1904 Output of Close to $7,000,000 — 11 Builders of Bodies and Parts—First Vehicle Built by Olds in Lansing in '87.

Special Correspondence.

WASHINGTON, D. C., June 2.—The Census Bureau has completed the first quinquennial census of the manufacturers of the State of Michigan. Heretofore the work of the Federal census has been limited to ten-year periods, but Congress having been convinced of the importance of providing reliable data for the manufacturing concerns at more frequent periods, provision was recently made for the gathering of these figures every five years. Michigan is the first state for which complete returns have been received, and it is of special interest to the automobile trade, owing to the importance of that industry in Detroit, Lansing and Kalamazoo.

The report shows that from a business point of view, the automobile industry in Michigan had its birth in the city of Lansing. As early as 1887, R. E. Olds invented and built a gasoline "horseless carriage," and operated the same on the streets of Lansing. The success of this automobile led to the building of another in 1888, the merit of which resulted in the formation of a company with a capital of $50,000 to manufacture "horseless carriages," as they were then called. Their manufacture continued on a comparatively small scale until, their practicability having been established, a larger company was organized to operate in Detroit with a capital of $350,000. The organization of this company was promptly followed by that of other companies in a number of cities of the state. The industry has so steadily increased that Michigan now ranks among the first states in the manufacture of automobiles. Lansing claims the distinction of producing more automobiles than any other city of its size in the world, and likewise of having in actual use on its streets, 1 automobile to every 150 inhabitants. The largest factories are located in Detroit, Lansing and Grand Rapids, in the order named, and extensive preparations are being made in these cities for a further development of this industry in the year 1905. Several large factories have recently been completed, and are now in active operation. Competent local authority states that the output from the factories in Detroit and Lansing will be more han doubled within the twelve months immediately following the publication of this report.

The figures show that there are 22 automobile manufacturing establishments in the state, with a total capital of $3,765,240, divided as follows: Land, $173,977; buildings, $361,634; machinery, tools, and implements, $544,560; cash and sundries, $2,685,069. The number of proprietors and firm members is placed at 9. The average number of wage earners in the industry is 2,735, and they receive $970,895 annually. The total miscellaneous expenses for these 22 establishments is said to be $1,423,176, of which $12,805 is for rent of work; $9,365 for taxes; $370,035 for rent of offices, interest, etc., and $1,030,962 for contract work. The total cost of materials used in 1904 was $2,872,655, of which $2,848,148 was for principal materials, and the remainder, $24,507 for fuel and rent of power and heat. The total value of the product in 1904 was $6,876,708.

Detroit reports 12 automobile manufacturing establishments with a total capitalization of $2,982,949, with 1,564 wage earners, and a product in 1904 valued at $5,382,212. Lansing has 3 establishments, with a total capital of $507,580, with 428 wage earners, and a product in 1904 valued at $1,237,379. Kalamazoo reports 3 establishments, capitalized at $96,471; with 48 wage earners, and a product valued at $72,959 in 1904.

It also appears from the report that there are 11 establishments manufacturing automobile bodies and parts, with a total capital of $581,627, employing 612 wage earners, and turning out a product in 1904 valued at $1,119,826. Seven of these establishments are located in Detroit and their product last year was valued at $857,839.

BOSTON GARAGE BURNED

Building and Many Cars Destroyed but Gasoline Tank Undamaged.

Special Correspondence.

BOSTON, June 3.—Boston's first garage fire of dangerous proportions occurred on the forenoon of Memorial Day, in the Beacon

PUMP LEADING TO UNDAMAGED TANK OF GASOLINE IN BURNED BOSTON GARAGE.

Garage, at the corner of Brimmer and Byron streets, conducted by A. R. Bangs, agent for Franklin cars. The fire resulted in the destruction of twenty automobiles and the serious damage of twenty-three others. These included several which Mr. Bangs had entered in the races at Readville, among them a Darracq and several Franklins. There were also in the fire a few stock and demonstrating cars and a number of machines which were "boarded" at the garage, and belonged to Boston people. Fortunately, when the fire occurred most of the machines which are usually kept at the garage were out, the owners having taken them away for the holiday.

The fire broke out at about 9 o'clock in the morning. The cause has not yet been definitely ascertained, though various suggestions have been made and the state police have conducted an investigation. It has been stated that it was due to the dropping of a torch by a chauffeur upon the wooden oil-soaked floor. Another explanation is that it was caused by the pilot light of a steam car. The garage was in charge of Manager Hawkins, who says that the whole main floor seemed to be in flames in a second. The building was a three-story brick structure, and the garage occupied the lower floor. Above was a carriage factory and a paint shop and on the top floor were tenements.

The interesting feature of the fire was that the gasoline tank, underneath the floor near the entrance in the main garage, where the fire was hottest, did not explode. The tank was buried three or four feet under ground and in it at the time were 150 gallons of gasoline, quite filling the tank. From the tank a long-distance self-measuring pump, manufactured by F. S. Bowser & Company, was used to force the gasoline to the garage floor. The fire was so hot that the pump which was encased in an ordinary galvanized semi-fire-proof cabinet, was warped, but the gasoline apparently was in no danger of exploding at any time and did not even catch fire. After the fire representatives of the Bowser company, of Mr. Bangs, the underwriters and the state police, examined the pump. It was found that the heat had made the pump useless, but the valve between it and the gasoline was in working order and the tank was full. There was a vent pipe from the tank to the roof, but this was carried away when the walls of the garage fell in. The state officials expressed much surprise that the tank had not exploded and in the regulations for garage which are likely to be made as a result of this fire, requirements for a similar arrangement of the gasoline supply are likely to be included. Similar tanks and pumps are in use at the Massachusetts Automobile Club, the Country Club garage and in other places in Boston.

Mr. Bangs carried a $10,000 blanket insurance and he said after the fire that he thought his loss was covered. Some of the cars that were stored at the garage were not insured. In the course of the fire several firemen were precipitated into the burning building by the falling in of the roof, but all were rescued. On the top story were two children locked in a room. A woman tenant of another apartment, knowing that the children were there, braved the flames and brought them out. It is estimated that the total loss was about $150,000.

WILL FIGHT A. L. A. M.

Panhard & Levassor Break with the Selden Patent Association.

Considerable interest has been aroused in automobile trade circles by the announcement, recently made by the Association of Licensed Automobile Manufacturers, that the suits brought against the firm of Panhard & Levassor, of France, and Andre Massenat, of New York, the American representative of the house, had been reinstated. The announcement made some time ago by the association that Panhard & Levassor had agreed to take out a license under the Selden patent, controlled by the A. L. A. M., was received with great interest by the trade, as taking a license involved an acknowledgement of the validity of the Selden patent, the claims of which were held by the association to have been infringed by the Panhard cars. The new announcement sets forth that Andre Massenat, claiming to act with full authority to represent Panhard & Levassor, signed an agreement in the name of the firm and also individually, the purpose of the agreement being the settlement of the suits brought against the firm and its representative in this country for the importation of Panhard automobiles. The agreement provided for the taking out of a license under the Selden patent and for a decree and an injunction against Panhard & Levassor and Andre

Massenat. But the French firm, the announcement states, has declined to acknowledge the validity of the agreement made by its representative, and refuses to carry out its terms. Therefore, the suits instituted by the A. L. A. M. will be prosecuted as though no agreement had been entered upon.

J. P. Murray, of the New York law firm of Coudert Bros., the legal representatives in the United States of the firm of Panhard & Levassor, in response to an inquiry by a representative of THE AUTOMOBILE, made the following statement:

"The agreement made between Mr. Massenat and the A. L. A. M., was simply a tentative arrangement, as Mr. Massenat has not the power to definitely close such an agreement without the ratification of the parent house. When this provisional agreement was drawn up and submitted to Messrs. Panhard and Levassor for approval, M. de Knyff was sent to New York to investigate the matter thoroughly and report at headquarters. This he did; he made a careful examination of the whole matter and made a report to the board of directors of the firm of Panhard & Levassor. After mature consideration, the directors concluded that they could not ratify the agreement, and the A. L. A. M. was so advised. That is really all there is to the affair.

"I cannot see how there could have been any misunderstanding on the part of the A. L. A. M., as to the nature of the so-called agreement, for the Association's counsel, Messrs. Betts, Betts, Sheffield & Betts, made no attempt to hold Panhard & Levassor to it, which, it seems to me, they certainly would have done if they had thought the agreement binding.

"We are not only counsel for Panhard & Levassor," continued Mr. Murray, "but also for Renault Frères. Mr. Parker, counsel for the Ford company, is working in conjunction with us and has an office connecting with mine. These three automobile manufacturing concerns will not only defend themselves against all Selden patent suits, but will also defend any of their customers against whom suits may be brought, free of charge to such customers."

FRENCH CUSTOMS REGULATION.

Special Correspondence.

WASHINGTON, D. C., June 2.—Manufacturers of automobile accessories and supplies will be interested to learn that there has recently been promulgated in France a customs circular with regard to merchandise marks, setting forth the fact that the law prohibits the entry of and excludes from bond, transit and circulation, all foreign manufactured products bearing, either on themselves or on their cases, packing, covers, bands, labels, etc., a trade or manufacturer's mark, name, sign or any sort of indication likely to lead to the belief that such goods have been manufactured in France or are of French origin. Thus, the marks of French vendors would be an infringement of the law. A foreign product is liable to seizure by the sole fact that it, or its packing, or covering, presents any indication which would cause the belief that it was of French origin.

The use of the French language to designate the nature of imported products does not constitute an infringement, unless the inscription be of a nature to deceive the buyer as to the real origin of the goods.

Common carriage bolts are poor affairs for use on an automobile, and should never placed where they will be subjected to much strain.

News and Trade Miscellany.

The Webb Company, of New York, is now occupying its new store at 1679 Broadway.

Through lack of enthusiasm it is probable that the race meet proposed to be held at Columbus on July 4 will be called off. The project has been talked of for some time, but thus far the Columbus Automobile Club has not taken steps to organize the meet, and without the aid of the club there is little chance of success.

J. W. Underwood, former manager of the Northern Automobile Company, has been appointed general manager of the new Union Automobile Manufacturing Company recently established in St. Louis with a capital of $100,000. Mr. Underwood has departed for the East, where he will visit the principal automobile factories.

R. M. Owen, of 138 West Thirty-eighth St., New York, sales manager for the Reo Motor Car Co., has announced that Reo cars will be sold, when desired, on thirty days' trial, the purchaser having the privilege of returning the car and receiving his money back if, at the end of that time, he is not satisfied with the machine.

Several automobiles especially adapted for freight and passenger service are being built for a line to be operated between Chestertown, Ind., and Betterton, Md., a summer resort on Chesapeake Bay, and it is expected the line will be in operation early in June. Wilmington capitalists are back of the project which, if successful, will be extended to other towns on the east shore of Maryland.

It is probable that the Peerless Company may decide to build a new racing machine for Barney Oldfield this season. Oldfield's recent defeats discouraged the champion considerably. The *Green Dragon* was overhauled at the Cleveland shops a short time ago and a new engine installed, but thus far it has not come up to the speed for which it was designed. The construction of a new car would not take long, as the Peerless company has parts for a more powerful machine which could be erected quickly.

The establishment of an automobile passenger line in Wilmington, Del., is now being contemplated by the officials of the Wilmington, New Castle & Southern Railway Co. This company now operates a trolley line between Wilmington and Delaware City, but, owing to an entanglement with the Wilmington City Railway Company it has no lines in the city, and the object of the automobile service is to connect with its trolley cars at the city limits and convey passengers to different points throughout the city.

The Dayton Manufacturing Co., of Dayton, O., has just been incorporated at Columbus with a capital stock of $150,000. The stockholders are E. P., J. C. and C. C. Hooven, E. Heiser and C. D. Prichter. The company will begin operations July 1, giving employment to about one hundred men and fifty girls. The new organization was formed to take over the plant of the Dayton Rubber Company, in which J. C. Hooven was formerly interested. It is the intention of the new company to put out about 1,000,000 pounds of rubber a year.

A fight against the $10 license fee for motorcycles is planned by the St. Louis Motorcycle Club, backed by the Federation of American Motorcyclists. The arrest of Roland Van Hoefen recently for operating his motorcycle without a license will be made a test case by the club, which stands ready to take the case to the Supreme Court. Motorcyclists claim that their machines are bicycles and that to tax them under the law governing automobiles is unlawful. The club has almost 100 members, all of whom have taken out bicycle licenses, and refuse to pay the $10 automobile fee.

The Correspondence School of Automobile Engineering, of Akron, Ohio, has issued a very interesting prospectus describing complete courses of instruction on gasoline, steam and electric automobiles and also motor boats. The courses are not intended, the prospectus states, to take the place of practical work, but to prepare the student for the road and give him a knowledge of the principles governing his machine, which knowledge may be applied without the great loss of time attendant upon finding out these things by practical, and frequently disagreeable, experience.

It is announced that the St. Louis Motor Carriage Company will remove its shops and business from St. Louis to Toledo, O. The reason given for the change is that the business has outgrown the present quarters, and as a much larger factory will be required, it can be operated more cheaply outside the city. President Jesse French, of the company, is in communication with Mayor Finch, of Toledo, regarding the establishment of the new plant, if suitable concessions can be obtained from the Toledo authorities. The company will continue to operate large salesrooms here.

The Foljambe Automobile School, of 70 Stanhope St., Boston, Mass., announces a summer course in automobile handling, including both theory and practice. Students are afforded opportunities for doing practical shop work, such as making small repairs, patching and vulcanizing, tires, testing motors and so on, and the road experience necessary to enable the student to qualify as a chauffeur, if he so desires, is also given, a 1905 touring car of approved type being supplied for road work. E. S. Foljambe, S. B. M. E., the director of the school, is an instructor in the Massachusetts Institute of Technology.

The Haschke Compound Storage Battery Co., of 87 Ashland Boulevard, Chicago, has been incorporated with a capital of $100,000 and will manufacture a compound storage battery, the invention of J. E. Haschke, an electrical engineer who has been using his battery to furnish current for cutting steel beams, opening safes and so on, the metal being burned through by the passage of the current from one carbon point to another. The battery is to be applied to the propulsion of automobiles. It is claimed that an automobile equipped with an experimental battery of this type has made a mileage of 107 miles on a single charge.

There might have been international complications recently in Philadelphia had it not been for Director of Public Safety Smyth. George Burke, chauffeur for Consul Julio W. Boz, of Mexico, was arrested for operating his car without a license. When his case came up the next day Magistrate O'Brien held him for further examination, ordering a summons to be issued meanwhile to insure the presence of Consul Boz. Director Smyth, however, remembered the Hugh Gurney incident in Cambridge, Mass., and ordered that the summons should not be served. There was nothing to do then but discharge Burke, and he was immediately set free, with an admonition to apply to the Bureau of Boiler Inspection for a license.